run 5

THE JOURNAL OF STRATEGIC STUDIES GROUP

Issue 6

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Featured in this Issue

- ★ **Armee de L'Air** – the contest winning scenario for *Europe Ablaze*
- ★ **Novorossik** — a scenario for *Battlefront*
- ★ **Anzio Replay** — Keating and Trout fight it out!
- ★ **Russia** — What we have in common with Hitler and Napoleon
- ★ **Battles in Normandy** — Designer's Notes
- ★ Axis Aircraft of WWII for *Europe Ablaze* (Part Two)

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Run 5

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April, 1987

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Editor
Ian Trout
Contributing Editors
Roger Keating
Gregor Whiley
Malcolm Power
Mark Holman
Andrew Taubman
Danny Stevens
U.S. Operations
John Gleason
Mentor
Ken Trout
Layout
Ian Trout
Colour Artwork
D. Walter Evans
Advertising
Printing
Maxwell Printing Co. Pty Ltd

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P.O. Box 261, Drummoyne. 2047
AUSTRALIA
(02) 819-7199

1747 Orleans Court,
Walnut Creek. CA. 94598
U.S.A.
(415) 932-3019

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EDITOR'S CHANCE

We have made up for the fact that Issue 5 was three weeks early by publishing this issue three weeks late. As I have explained elsewhere, *Russia* has gone just a bit over schedule (about three months) and that has delayed production work on the magazine. I mean, when you're fighting desperately to keep Moscow out of German hands, who has time for answering questions or writing designer's notes? I ask you!

As I write these words *Russia* has been on sale for two weeks. It's the best game that we have done and it's the best we can do.

This is as good a place as any to formally acknowledge the tremendous contribution to the game's development made by our own Gregor Whiley. He has resolutely endured ire and frustration to ensure that many sensible and ultimately effective modifications were made to various routines. He has pinpointed so many bugs that he could qualify for an honorary degree in entomology. And last, but not least, he is reponsible for making the rule book as free of errors as it is.

We still haven't produced the tables of organization and equipment that we promised for use with *Battlefront*. We're working on them. Hopefully, a first installment will be ready for Issue 8. Issue 7 is already full.

Included in next issue's offerings will be a full replay of the Russian Campaign. Roger will be commanding the Axis forces and I get the job of mismanaging the Soviets. We're still in the process of selecting our subordinates.

There will be a campaign variant for *Russia*. It is this editor's opinion of Germany's best chance for beating the Soviets. It assumes that Germany spent the autumn and winter of 1940-41 preparing for a spring invasion of the British Isles and that it was carried out successfully. It is hard to see how it could have failed given Germany's overwhelming military advantages.

Whatever, the Germans will be free to attack Russia in the summer of 1942. The Soviets will have fortified their front line in Eastern Europe and will not be as disorganized.

There will be no D-Day and Salerno (or its equivalent) will not occur until sometime in 1945. OKW requirements will be substantially reduced, as will the second front variable.

I'm hoping it will be an enlightening look at what could have happened.

Also in Issue 7 will be two *Battlefront* scenarios, one from the North African desert and the other, inspired by the *Russia* variant, a postulated look at a possible German invasion of Britain; a 1941 version of *Sealion*.

There will be a further chapter on technical specifications for WW II aircraft for *Europe Ablaze* and Roger will have prepared another article on computer program design.

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To subscribe, consult the schedule of fees above and make sure you include your computer type (Apple or C-64) with your cheque or money order if you want a disk subscription. A disk subscription entitles you to however many disks are necessary to complement all the scenarios in the magazine.

For those of you who don't want to spend this extra money. . . don't worry. All the data necessary to build the magazine scenarios will be provided for you.

North American subscribers should send a cheque or money order (in US funds) to our US office. Everyone else should send their cheque, money-order, Visa or Mastercard to our Australian office.

Individual scenario disks can be purchased for $15.00 each.

AND THE WINNER IS. . .

We have finally published the winning entry in our *Europe Ablaze* contest. Adrian Long of

Continued on p.6

LETTERS TO THE EDITOR

A lot of readers write to us in complimentary terms. However, most seem to find a game topic dear to their heart that we have not yet covered. This form of customer participation is fine by us. SSG actually works as a guided democracy. Everybody gets a vote, and Roger and Ian count them. Some readers votes are recorded below.

Dear Sir,

I have recently purchased a copy of your game *Carriers at War* and wanted to take this opportunity to congratulate you on "A job well done". I especially like the design your own scenario feature. One of the strong points of a computer is the creativity it bestows on its operator and the design feature fills this gap.

The second reason I am writing is to express my feelings on a subject that is near to my heart. To wit, 'modern naval combat operations'. As I am sure you are well aware, there are only five computer games on the subject and only one on what will probably be the decisive area of operations, the North Atlantic.

What I was wondering was; is it possible to use the design feature of CAW to design modern naval scenarios? Have you considered doing such a game? What with recent media, book and film attention that the Navy has gotten, a game on this subject might do very well. If the above is not a possibility, could you possibly do a few scenarios in *Run 5*?

Any response or information you care to make would be appreciated.

Thomas C. Cianflone

Cheektowaga, NY. USA.

Dear Sirs,

I have just acquired *Battlefront* and think that it is absolutely the most mature war simulation I have come across. Since all of the reviews of this simulation stated it contained a scenario for the battle of Saipan and that island is only a hundred plus miles north of Guam, I was naturally attracted. I've come close to 'battle fatigue' while being hammered by the Japanese and notice a tendency to duck now at sharp sounds; the simulation is that good.

The purpose of this letter is not only to compliment Messrs Trout and Keating, but to become a full-fledged member of your 'group'; I want to subscribe to *Run 5* with the disk.

For future scenarios, have you ever considered the early ventures of Japan in Manchuria and China as a simulation? There you would have a delicious combination of politics, renegade military cliques (The Manchurian Incident) and spies, as well as overt warfare. And the groundwork was all laid by the Russo-Japanese War in 1905. What a story! Also, do you anticipate ever putting simulation scenarios on the Apple 800K disks? Lots of room there.

Thank you for providing so many challenging hours.

Maurice R. Wilson, Jr. Lt/Col. USAF (Ret.)

Guam, USA.

Dear Sirs,

First of all I would like to take this opportunity to congratulate you on writing a superb battle strategy game, *Carriers at War.*

I have a Commodore 64 and have brought lots of battle simulations and programs to this effect. What normally happens is, I buy a game and play it all the time but then get fed up of playing it and don't play it again. But not *Carriers at War.* Ever since I received the game I have not stopped playing it. I normally finish at about four in the morning, because I just cannot turn the computer off.

I look like a zombie at work and I don't even care. To be honest I don't even know how I had the time to write this letter to you. (Well to tell the truth my ships have all been sunk.)

Philip Riches

Stevenage, England

Gentlemen,

I would like to take this chance to tell how highly I regard your work. I own many computer games, covering many subjects, but I find your games to be the most flexible and ultimately the most long lasting.

With one game, say *Europe Ablaze*, you can create and play games from WWI air combat to Korean War conflict. With the advantage of using the same mechanics for each scenario and the fact that each scenario can rightly be called a complete game, this can save hundreds of dollars by eliminating the need to buy the game for each scenario. So I would like to put in my vote to continue structuring your games with the design kits. Even, as in the case with *Russia*, it means just being able to totally control every factor in the game.

If you are keeping count, I would like to put in my vote for your next release. The one subject I would like to see is modern warfare from naval to air to land. I really would love to see modern war applied to the game routines of *Carriers at War* , *Europe Ablaze* and *Battlefront* .

Well thats all I wanted to say, keep up the great work and good luck. Look forward to *Russia* and *Road to Appomattox.*

Robert Sendler

Blytheville, Ark. USA.

Gentleman,

I would like to take this time to thank you for the prompt service that you did for me over a year ago. I had purchased a copy of *Carriers at War* (Version 1.1 C64) and noticed a bug in the creation routines. I sent the diskette back to your Australian office and they gladly replaced the diskette free of charge (a service that most other companies would charge for). Not only did SSG replace the diskette, but they also sent me a complimentary copy of *Reach for the Stars.* Although I was extremely impressed with their service and graciousness, I have never been a big science fiction fan and so I set the game aside. A month later, I found it sitting all alone on my bookshelf, so I decided to load

it up, just out of curiosity. To my unbelievable surprise, I found that it was an excellent game, and soon it became one of my favourites, along with *Carriers at War*.

A year has passed and I am finally getting around to this letter thanking you for excellent service to the wargaming hobby. I have purchased *Europe Ablaze* and *Battlefront* since then and sure enough these two fine games also take up most of my computer time. I am also a subscriber to your brilliant new magazine *Run 5*, and I am now eagerly awaiting the release of *Road to Appomattox* and *Russia*.. My only concern is that I hope to find enough time to play these games without taking away from the others!

What I would like to see is a small unit level game (Battalion as the major command and squad as the unit of manoeuvre) incorporating the excellent design features of *Battlefront* . The scenario possibilities would be endless! If you ever do decide to produce something like that, I will buy the very first release.

Once again, I thank you for your excellent service and wish you the best of luck in the future.

Jeffrey L. Adam

Marina, CA. USA.

Dear Ian

I just wanted to drop you a line to let you know much I enjoy your games and to offer a suggestion re *Run 5*.

Like many computer gamers, I am a veteran board wargamer who enjoys computer games because they offer the opportunity to play a solo game against a competent opponent at my leisure. While I do have a few aquaintances that have computers, none of them unfortunately are into wargames, let alone SSG wargames. This leads to my problem, one in which a great deal of others probably share - I'm playing these games in a damn vacuum! There's no one to compare and discuss strategies and playing styles with. I can't tell if my play is above average, sub-par or what. I've had a few phone conversations with John Gleason re approaches to 'Bastogne' and 'Piercing the Reich' but thats it.

What I'm getting at, albeit in a long winded way is that I found the Guadalcanal replay in issue #4 to be extremely interesting and beneficial. It gave me a point of reference vis-a-vis my own play. Aletrnatively, due to space considerations you enumerated in issue #5, how about a 'strategically speaking' section as a regular (or semi-regular) feature? It could be a compilation of reader submitted short pieces on strategies and approaches to the various games and variants.

This would go a long way to alleviate the 'vacuum syndrome' that I and I suspect a great deal of others share. Most of us are not fortunate enough to have friends and business acquaintances that share our hobby.

Thanks Ian for your time....

Ken Counselman

Maple Heights, OH. USA.

[If anyone does care to drop us short note along these lines, we'll be only to happy to fit it in somewhere.]

Dear Sirs,

I have been quite a fan of your simulations almost since you first started producing them, and since I order my software by mail, I have backordered your simulations automatically without even knowing the details of the simulations themselves, at least at first until I get more information on them such as in *Run 5*.

I consider your simulations the most sophisticated and thoroughly researched of all the products presently on the market, despite the fact that I tend to prefer strategic/operational games more than operational types that you have so far produced (excepting *REach for the Stars* of course). This is why I was so happy about your *Russia*//*Road to Appomattox* simulation plans.

I have received rather disturbing news from my software distributer to the effect that *Road to Appomattox* is not planned for production. The notice on my backorder did not state whether this is just a temporary postponement or a permanent cancellation, but I wish to protest any possible permanent cancellation plans of the simulation. As a devoted Civil War fanatic I have waited patiently for your simulation, understanding that the ground breaking nature of it might require long delays that could not at first be foreseen. However, a complete abandonment of the project might be more than I can take. (After all this type of game has rarely been produced either in board or computer fashion, and not very well at that.)

If you are at all thinking of deep-sixing the project I think I can speak for many of your fans when I emplore you not to, even if you have to cut your standards somewhat (I assume memory is the villain) to get it out.

Robert Gurske

Ware Neck, VA. USA.

[There is somebody with a mischievious sense of humour. Road to Appomattox *has not been canned, nor will it be. The problem is that it's a very demanding project with heaps of new routines with which we have little or no experience. Doing anything new takes time and as the game is my personal favourite I'm loathe to compromise any our the original design scope. There's some more details on the project in the Editor's column.]*

Dear Sirs,

I am writing to you to throw out my two cents on any games you might have planned for the future. I am an ex-Marine and really love modern naval wargames. I spoke to your representative in California and he said to write to you.

I know that you decided not to proceed with a Falklands Island game a couple of years ago. Have you maybe reconsidered? I have all of your military games and enjoy them very much. My subscription to *Run 5* greatly enhances those games. The features that I enjoy the most are the ones that allow you stop the game and see what's been happening to both sides. I also like the comprehensive data tables that are coming with *Run 5*.

Because your games are so detailed and comprehensive, I hope that you will make a modern naval game. I understand that computers, radar and missiles make game designing a bit more difficult. If there is anything that I can do to help I will. Modern naval weapons are my special hobby.

Well, I just wanted to tell you what I was interested in, and to say than you for some excellent games.

Dave Matheson
Portage, MI. USA

A quick glance through the Work in Progress column on p. 4 will reveal that some of these gentlemen have had their wishes granted, others not. ◆

BATTLES IN NORMANDY

EDITOR'S NOTES

By Gregor Whiley

The front cover illustration for this issue is from our new **Battles in Normandy** *game. And no, it couldn't possibly have been that Sherman from the game's front cover that put the Panther in such a sorry state. It must have been a Tempest or aThunderbolt. . .*

WHAT IS IT?

Battles in Normandy is the finest expression yet of the power of the Battlefront Game System. We have provided a complete map of the Normandy Peninsular and eight demanding scenarios. They cover the two months of bitter fighting in the Normandy beach-head from the landings on D-Day to the battles of attrition around Caen. Historical articles and notes on variations accompany each scenario. *Battles in Normandy* gives you the power to analyse history as you recreate it.

Being an SSG product, *Battles in Normandy* naturally contains a complete design kit and a ninety-six page rule book that tells you all you need to know. Since we have mapped out all of Normandy, you have everything you need to vary scenarios or even create new games. The map is 105 by 65 hexes and extends from the tip of the Cotentin Peninsula to Potigny and from Dives to the Atlantic Ocean. The battle area for each scenario is highlighted.

Battles in Normandy is the result of a truly unthinkable number of man hours from Malcolm Power and Andrew Taubman, two of SSG's ace game testers. Before you get too sympathetic, consider this. While the rest of SSG was trudging through the snows of Russia, these two had it easy in the fields, orchards and dives of Normandy. Talk about lucky.

WHY DID WE DO IT?

Battles in Normandy arose out of a long discussion at SSG over what to do with the Battlefront Game System. We knew that there was a real demand for extra material from the mail we were getting and the enthusiasm for *Run 5*. The solution was to create a new game that would totally stand on its own. People can use *Battles in Normandy* without having to purchase *Battlefront*. The new game gave us options that we just couldn't get any other way.

Battles in Normandy will contain a number of slight improvements over the original. These are really refinements intended to make the actual design of scenarios a bit easier and do not greatly change the game mechanics. They represent the distilled pleadings of our scenario designers and testers, who usually don't get a second chance to influence proceedings. The extensions we will build in simply extend the utility of the original system.

Before we go any further we should discuss compatibility problems. There aren't any. All *Battles in Normandy* scenarios will run under the original *Battlefront* system which will ignore the extensions. All *Battlefront* scenarios (which includes all those published so far in the magazine, including the one in this issue) will run under the new system, which will not be fazed in the slightest by the 'missing' bits. Scenarios created under one system but turned into save games on another, will in effect belong to the latter system.

WHAT'S NEW

So what's new? The first change concerns weather. An extra option will enable you to select a climactic type along with the normal weather options. This will allow for more accurate weather in say North Africa or New Guinea, both different to the European weather system built into *Battlefront*.

Another change will give all divisional HQ's their own movement rate. At the moment they all use the mech-min rate. However sometimes it would be nice to slow them down, or even stop them moving altogether, as in the case of Airborne divisions who should be compelled to stay on their drop zones to get resupplied. HQs with a movement rate lower than the mech-min will be treated as infantry types while those with higher movement rates will be treated as motorized.

We have also managed to get across a few problems with rivers. River hexes will now come in three types. Impassable, passable only by non-mech types and passable by all types. Bridges will still allow passage over any river. This is an alternative to the one hex wide river previously used.

The combat interrelationships between the different battalion types will be slightly reworked to improve their interaction. It's also possible that we'll actually describe these interrelationships in the rule book!

Regimental integrity is not as precise as we'd like it to be. We'll be doing some work on the command and movement routines. Battalions can become bogged down miles away from the rest of their regiment even when there is little pressure on them. We expect to eliminate this problem.

There is an important caveat on the above details. We fully intend to implement these refinements (we may even think of others) but because of production deadlines and other boring details, I write these words before Roger writes the code. The *Battles in Normandy* documentation will contain the only authoritative list of changes. ◆

Continued from p.2

Albion, Qld has taken the prize of $500 for his Armee de l'Air scenario. It starts on p. 33.

Other commendable entries came from. . .

Chris Dunning of London submitted a scenario that could be considered a worthy successor to the winner. It covered Operation Dynamo, the evacuation of Dunkirk.

Micheal Ross Colclough produced a scenario on Operation Pedestal, a favourite with CAW scenario designers as well.

Stephen Burton of Covina, California envisaged a much tougher Luftwaffe in 1944, headed by Galland and with reasonable supplies of Me-262s.The Allies have P-47s, P-51s and enough B-29s to deploy in Europe. Something for everybody.

Daniel H. Antolec of Monona, WI entered two scenarios. One, a one day historical representation of the bombing of Ploesti. The other is a two week campaign variant.

John R. Piepho of St. Louis, Missouri also produced a May 1940 scenario and Philip L. Mizell of Little Rock, ARK produced a fantasy Caribbean scenario in which an intense three week air battle did little for the tourist trade.

All the contestants had clearly taken a great deal of trouble with their entries and some of these scenarios will undoubtedly appear in future issues of *Run 5*.

Entries can still be submitted for the *Battlefront* competition. Conditions of entry are detailed on p.16. The closing date for submissions is June 30th. An exception to this closing date is that we will accept entries handed to us in person at the Origins '87 convention in Baltimore.

So far we have 46 entries, including at least a half dozen from Dan Antolec. If at first you don't succeed. . .

ORIGINS AGAIN

For the second time in three years, the Origins Game Convention will be held in Baltimore. There will be a large contingent from SSG in attendance, including Roger and myself.

The show starts July 2nd in the salubrious downtown convention centre and goes through to the 5th. We'd love to meet you.

WORK IN PROGRESS

Road to Appomattox

It is nearly three years ago that we first advertised we were going to release this game. Well, it's still not ready.

We have learnt a lot about simulating strategic events from *Russia*. In consequence, we have decided to revert back to a hex grid format.

We are quite happy with the tactical battle system; what is causing us problems is integrating the subordinate command positions with the general strategic routines.

We're just not sure how to proceed. We'll work at it and eventually get it right.

I do want to make it clear that, contrary to certain subversive rumours, we have **not** decided to can the project. The subject is of particular interest to me and we'll need to be able to solve these kinds of problems if ever we hope to develop a strategic Napoleonic game.

Battles in Normandy

Read the article on p. 5 for the details on this game. We're planning a June release (really!) and there doesn't seem to be any potential problem to upset this. If you liked *Battlefront*, you will like this one even more!

Reach for the Stars (3rd Edition)

The Macintosh version of *Reach for the Stars* will be available in June. As well as recreating the original game, there will be a completely new scenario, designed by yours truly.

Included among the new features are the following.

Navigation Technology. The current level of Nav. Tech. will determine which star systems are eligible as objectives. Nav. Tech. levels are increased by research investment.

Industrial Technology. The efficiency of RP production is directly linked to the current Ind. Tech. level. Ind. Tech. levels are increased by research investment.

Army Recruitment. In addition to producing colonists, excess population can now be inducted into the army and used for the planet's defense. Before invading troops can land, all PDBs must be eliminated and before the planet can be conquered, the defending army must be eliminated by the invading space marines.

There are many other changes to the original scenario; in short, the final effect is to produce an exciting entertainment with an very different economic base than the original game.

We will be producing a scenario disk with the new variant for Apple and Commodore in August. The new (advanced) rules will be part of Issue 8; and a scenario disk will be sent to all disk subscribers.

An upgrade kit (rules plus disk) will be available for $20 and all copies of the game sold after September will contain the new scenario.

Battles of the Civil War

The next tactical game system we intend to develop will simulate the period of warfare from the widespread introduction of rifled small-arms (c. 1860) to the advent of bolt action small arms (c. 1900).

We intend to cover the major battles of the American Civil War in two volumes, each containing 6 battles. The first volume should be ready by Sept-Oct and will cover the battles of First Bull Run, Shiloh, Fredericksburg, Second Bull Run, Antietam and Chancellorsville. Smaller battles will appear from time to time in *Run 5*.

The scale will be regiment/brigade level with considerable attention paid to unit formation and cohesion. The command structure will recreate the frustrations of the pre radio battlefield; subordinate formations may not obey their orders. . .

There will be more information on this project in the next issue.

Halls of Montezuma

We will be releasing another game in the *Battlefront* series in October.

Halls of Montezuma will be a battle history of the United States Marine Corps told in 6 scenarios which cover their most famous engagements from the American-Spanish War of 1898 to the Vietnam War.

There will be some minor modifications of the system to accomodate the different battles.

Other Projects

Also in the works is our first adventure game and a tactical game system to recreate smooth-bore musket warfare from 1700 through to 1860. ◆

ANZIO REVISITED

Umpired by Gregor Whiley

(An After-Action Report)

The Anzio scenario for **Battlefront** *appeared in Issue 5. From the feed-back we've received, many people consider it to be the best scenario to date. (And that notwithstanding a small cock-up which led to different road systems between the scenario disk and the printed map. See the errata section for an explanation. . . excuse).*
Pressure from within the company has inspired (coerced) the erstwhile designers to go one-on-one. Greg Whiley has dutifully kept the protagonists (more or less) honest; i.e. the master and scenario disks were placed under lock and key until the battle was resolved. Here's what happened. . .

THE BUILD UP

It is the 22nd of January 1944. The Allies have planned a daring amphibious landing at Anzio, designed to break the stalemate on the Gustav Line. One of the World's Greatest Generals stands ready to do battle. The other of the World's Greatest Generals will be along just as soon as he realises he is being invaded.

The landing was mainly Churchill's idea. He would be relying on one man to restore his somewhat tarnished reputation for amphibious assaults, General Keating. Although a New Zealander, he was no stranger to battlefronts, and was known by friend and foe alike as 'Killer Keating'.

While his straightforward Dominion manners were not popular with the brass at GHQ (one of whom observed that he was the sort of man to go trout fishing with dynamite), he had never been in a battle in which he had not lived up to his sobriquet.

The man with the task of saving Kesselring's bacon was supremely qualified for the job. The well connected General von Trout was destined for the Russian Front during the terrible days of the great general shortage, which had arisen after Hitler had fired or shot all of the incumbents.

Luckily, fate and his family intervened and von Trout found himself serving on the luncheon circuit of the Mediterranean Theatre. There he excelled, dining often on his favourite Italian dish, linguini, which he ate with gusto, his favourite Italian sauce. Von Trout also excelled in military matters and was known to be infallible when speaking *ex ristorante*. In fact there wasn't a battle where he hadn't made a meal of things.

Life at Anzio was not meant to be easy for either side. The Germans start with painfully few units on the board and cannot in any way contest the landing. The Allies will be assured of the space to develop their beach-head and maintain a reserve. What the Germans are capable of is fighting a continuous delaying action, tying down and exhausting the Allies, especially in the good defensive terrain. Since the Herman Goring panzer division is pound for pound the best unit in the field, defence can sometimes be turned into attack.

Since neither general has had a chance to study this battle beforehand (just like the real ones), their performance in the battle will be interesting, to say the least.

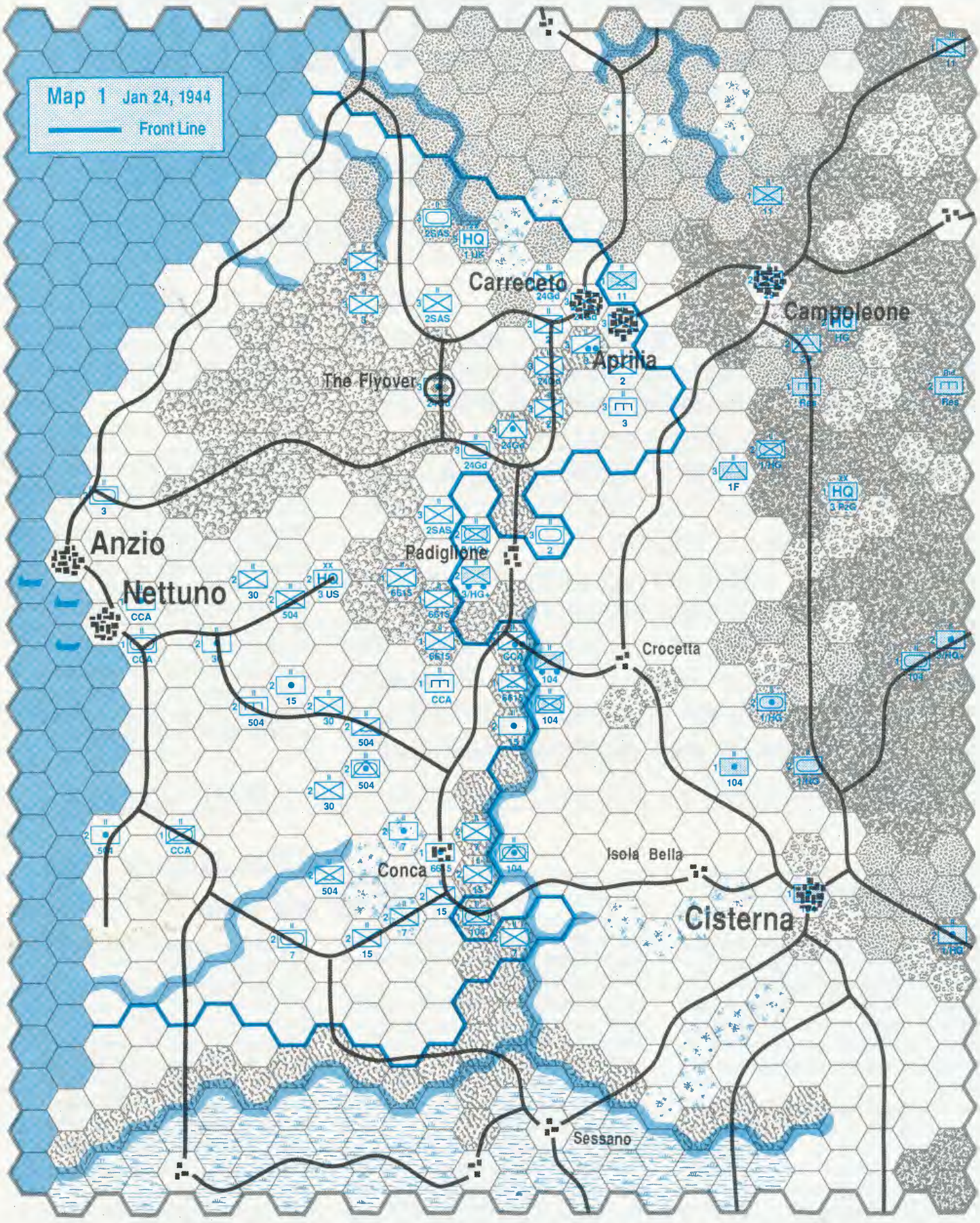
THE GAME

22nd January 1944

THE PLAN

ALLIED. We plan to drive straight out from the beach-head, more or less as they land. This means that the British 1st Infantry Division will drive north for Carreceto, Aprilia and Campoleone. The US 1st Armoured will head for Padiglione in the centre after which it will be swung north or south as the situation demands. The US 3rd Infantry has the job of taking Conca, Isola Bella and Cisterna in the south. No real resistance is expected on the first day.

AXIS. Since we have neglected to station any units on the coast, a strategy of flexible response is called for. We must conserve our few troops until reinforcements arrive.


Map 1 Jan 24, 1944
Front Line
Carroceto
Campoleone
Aprilia
The Flyover
Anzio
Nettuno
Padiglione
Crocetta
Conca
Isola Bella
Cisterna
Sessano

THE RESULTS

The Allies pour inland. The few German troops available form up at Carraceto and Padiglione. Keating shows great faith in his movement routines and attempts to drive a regiment straight off the beach to Sessano, for an end run in the south. Inexplicably this fails. The men are switched to Conca. The Allies take Conca and attempt to drive on Isola Bella. Meanwhile, German resistance stiffens at Padiglione as troops of the Herman Goring division continue to arrive. Is von Trout going to make a fight of it here? The Allies try one unsuccessful night attack at near Conca, accompanied by a flurry of rear area movement.

23rd January 1944

THE SITUATION

The *Fallschirmjager* just hold Carraceto. 3/HG defends just west of Padiglione. Nobody defends Isola Bella or Cisterna. The Allies have not even deployed properly yet, but things could be very interesting in the south. General von Trout is hoping that the Luftwaffe can help out and counter the vigorous Allied OBS.

THE PLAN

ALLIED. The infantry attacks north and south are to continue on their present axis. The Armour is to attack through the centre and then turn north to help out at Campoleone where tough resistance is anticipated.

AXIS. Reinforcements must be deployed to the south at Isola Bella. Defenders at Carreceto and Padiglione must hang on. The Luftwaffe must help out. The 29PzGr must try to form an armoured reserve in the centre.

THE RESULTS

The Allies strike trouble in the south. One battalion from 3/HG is holding up half a division just south of Conca. This is the only thing stopping the Allies from pouring across the river and grabbing Isola Bella. This forces Keating to try a trick right out of the game designers bag. This involves switching assets currently part of a regiment engaged near Conca to one still on the beach. It is hoped that the asset itself will not be engaged and will be free to advance on Isola Bella, dragging the rest of the regiment along behind it. Unfortunately, this fails.

Heavy fighting develops during the day at Careceto and Padiglione, where the US 1st Armoured is hampered by the lack of its divisional HQ. The Fallschirmjager take heavy losses including a KIA, and lose Careceto, while a battalion of 3/HG is KIA'd at Padiglione, where Keating has accepted von Trout's gambit and is willing to mix it with the HG.

The 3PzG division is now fighting north at Aprilia and south, near Conca, where it is holding up the US infantry. This is just as well as the gallant HG battalion is gunned down near Conca. Meanwhile the Fall guys take further losses including a KIA and lose Aprilia.

General Keating enjoys the luxury of being able to detach regiments from both the north and south to crush resistance at Padiglione.

24th January 1944

THE SITUATION (See Map 1)

The situation does not look good for the Axis. Nevertheless, von Trout is supremely confident, despite receiving a message from the local *Luftwaffe* to the effect that all their planes were being repainted, and were thus unavailable for any sort of messy work. Killer Keating seems to have excellent relations with his air forces, which are positively swarming into the sky.

Both generals seem to have agreed on the importance of the north. The US infantry are not making much headway in the south, past Conca and the armour has yet to take Padiglione, although it has killed a few Germans. Things are worse in the north where the Fallschirmjager have been crushed and Careceto and Aprilia both taken.

The 1/HG regiment has arrived and is being rushed to the north to stem the British advance. As events were to fall out, this is the start of von Trout's demise. Little though the over-confident general realized, he had irrevocably muddled his divisions with the consequence that vital turns would be wasted later in a vain attempt to sort them out.

In contrast, Keating has kept tight control over his regiments and in the coming days this will pay off in a much more effective combat performance.

ANZIO

ORDERS OF BATTLE

Allied

1st US Armoured

CCA
CCC
6615 Ranger (+)
179 RCT

3rd US Infantry

7 Inf
15 Inf
30 Inf
504 Abn

1st British Infantry

2 Bde (+)
3 Bde (+)
24 Gd Bde (+)
2 SAS

German

3rd Pz Gren.

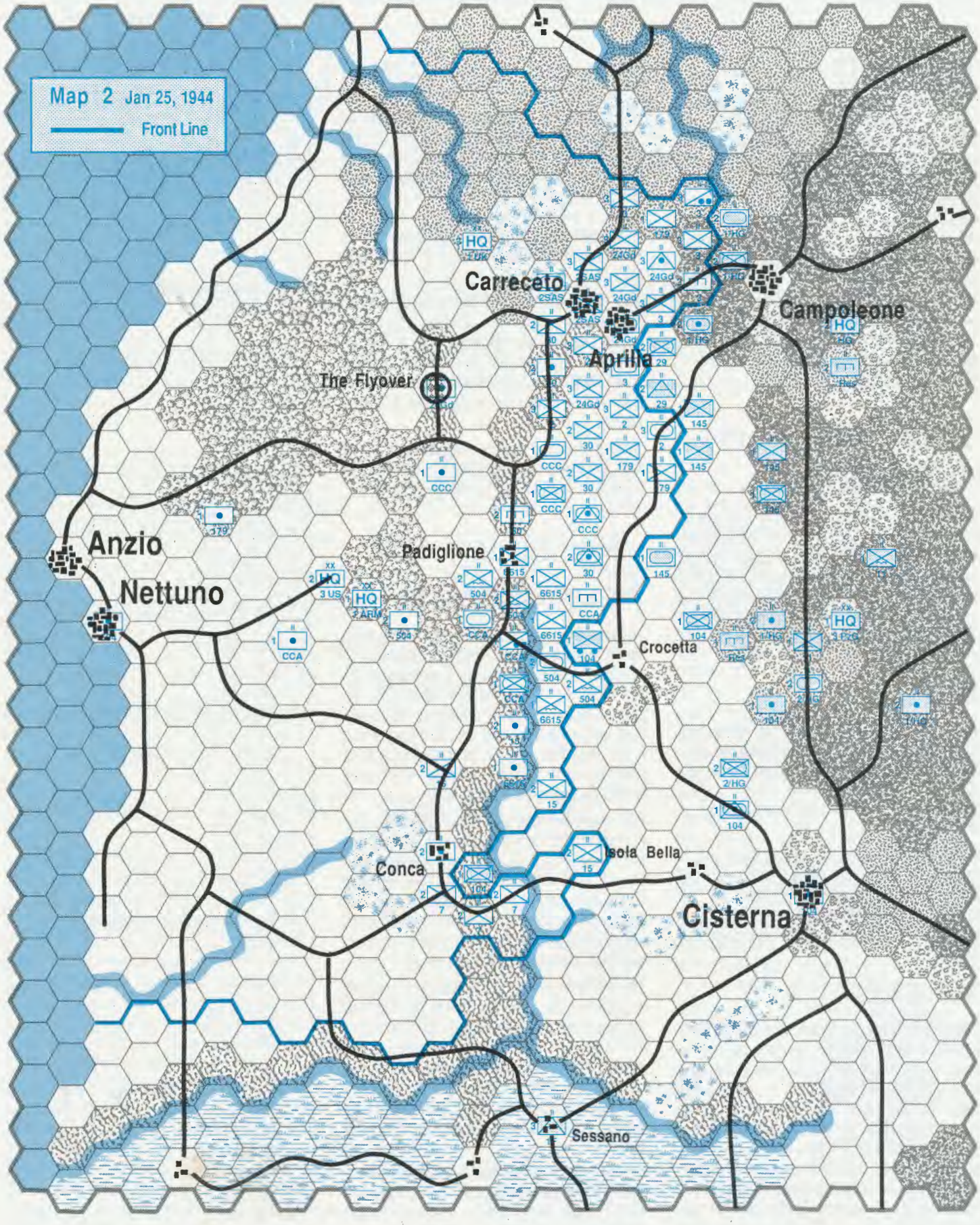
104/200
145 Inf
256 Inf
11 Fall.

Hermann Goring

1/HG
2/HG
3/HG (+)
29 PzG

71st Infantry (+)

94/194
114J/171
1 Fall.
735 Pz


Map 2 Jan 25, 1944
Front Line
Carroceto
Campoleone
Aprilia
The Flyover
Anzio
Nettuno
Padiglione
Crocetta
Conca
Isola Bella
Cisterna
Sessano

THE PLAN

ALLIED. Keating plans a general shift north. The British division will get priority allocation of OBS, and the two armoured Combat Commands now arriving will also be helping on the drive to Campoleone. Two infantry regiments from the US 3rd Inf will drive towards Crocetta in an attempt to outflank Padiglione.

AXIS. Von Trout plans to reorganise. The 3 PzG division will take over the defense at Padiglione and continue to defend east of Conca. The HG division is to be concentrated north at Campoleone for a counter attack. The reorganising necessitates a period of total defence until things are sorted out.

A sharp note has been despatched to the *Luftwaffe* commander. Meanwhile, family connections are being organised to have a word with Goring himself.

THE RESULTS

Von Trout continues to reorganise. The 3 PzG defends the river line in front of Isola Bella and at Padiglione. The HG shifts north to defend Campoleone and counter-attack. The Allies continue to grind on, handing out heavy casualties and taking light losses themselves.

Another battalion of the 3/HG is KIA'd at Padiglione, a result definitely not in the von Trout scheme of things. Padiglione is lost, the Axis retreating on Crocetta. The Axis counter-attacks are severely punished and achieve little at great cost. Presumably these imprudent acts were ordered by Hitler himself.

25th January 1944

THE SITUATION (See Map 2)

The Axis hold Campoleone with the HG. The PzG are now defending Crocetta. Once again the way to Isola Bella and Cisterna seems open, except for another lone German battalion, which in true to form is holding up a regiment. Unfortunately for the Allies most of the US Infantry which could be taking Isola Bella is mixed up in the fighting at Crocetta.

The British in the north are still some distance from Campoleone, but seem to be able to keep up incredible pressure on the defenders, attacking at night just to keep them awake and tired. The wily von Trout will sneak the lone representative of the 71st division down to Sessano. This will be used for a tricky end run on Keating's communications.

In a similar note of desperation, von Trout has arranged for his next communication with the *Luftwaffe* to be delivered by some friendly Panzer Grenadiers in their hospitality half-track. This ability to find the time, in the midst of crisis, to create such a personal touch is the mark of a great general.

Meanwhile, details of Keating's amazing air force co-operation plan are beginning to leak out. British MP's are apparently guarding the barricaded entrance to every hotel, bar or dive within staggering distance of an airbase. There are also whispered remarks of some sort of lottery.

Whatever Keating is doing it is certainly working. Allied aircraft are stacked up over Anzio, patiently awaiting their turn to bomb some Germans.

Von Trout is about to make another mistake. The shattered remnants of the 104/3PzG are about to be eliminated and no provision is made to replace them on the vital road due west of Cisterna. The 2/HG regiment should have been committed in defense of the Conca Bridge. Furthermore, the 11/3PzG should also have been sent south to back them up.

THE PLAN

ALLIED. The US Armoured division will seek to exploit its numerical superiority in the Padiglione area. The US infantry will merely keep the Axis honest in front of Isola Bella. The main push for that and Cisterna is planned to come from the north-west after success at Padiglione/Crocetta. The British infantry will still get the most OBS as they seek to grind down the defenders of Campoleone.

AXIS. Any reinforcements arriving must go into the line in the south where defenders are very thin on the ground. HG must hold in the north. Still looking to counter-attack where possible.

THE RESULTS

The Allies increase the pressure on all fronts. The last battalion of the 3/HG and another from the 3PzGr are killed near Padiglione. Another HG battalion is KIA'd in the north. Prospects of an armoured counter-attack would appear to be receding.

The US Armour pushes forward until it is only two hexes from the last north-south road running from Cisterna to Campoleone. Isola Bella is overrun and the Allies are on the outskirts of a barely defended Cisterna.

General von Trout seems to have forgotten to reinforce this major objective. News comes of the instant sacking of von Trout's Chief of Staff. Obviously von Trout hopes that this is the end of the matter but the question "What did von Trout forget and when did he forget it?", may linger in some circles.

The news is not all bad for the Axis. Two regiments of the 3 PzG, reinforced with a battalion of Tiger tanks counter-attack and KIA a US infantry battalion. This brings the KIA score up to 7 Axis to 1 Allied. Also the HG division holds out in the north, although the British are now only two hexes from Campoleone. Finally, a battalion from 3 PzG manages to reinforce Cisterna in the night.

26th January 1944

THE SITUATION

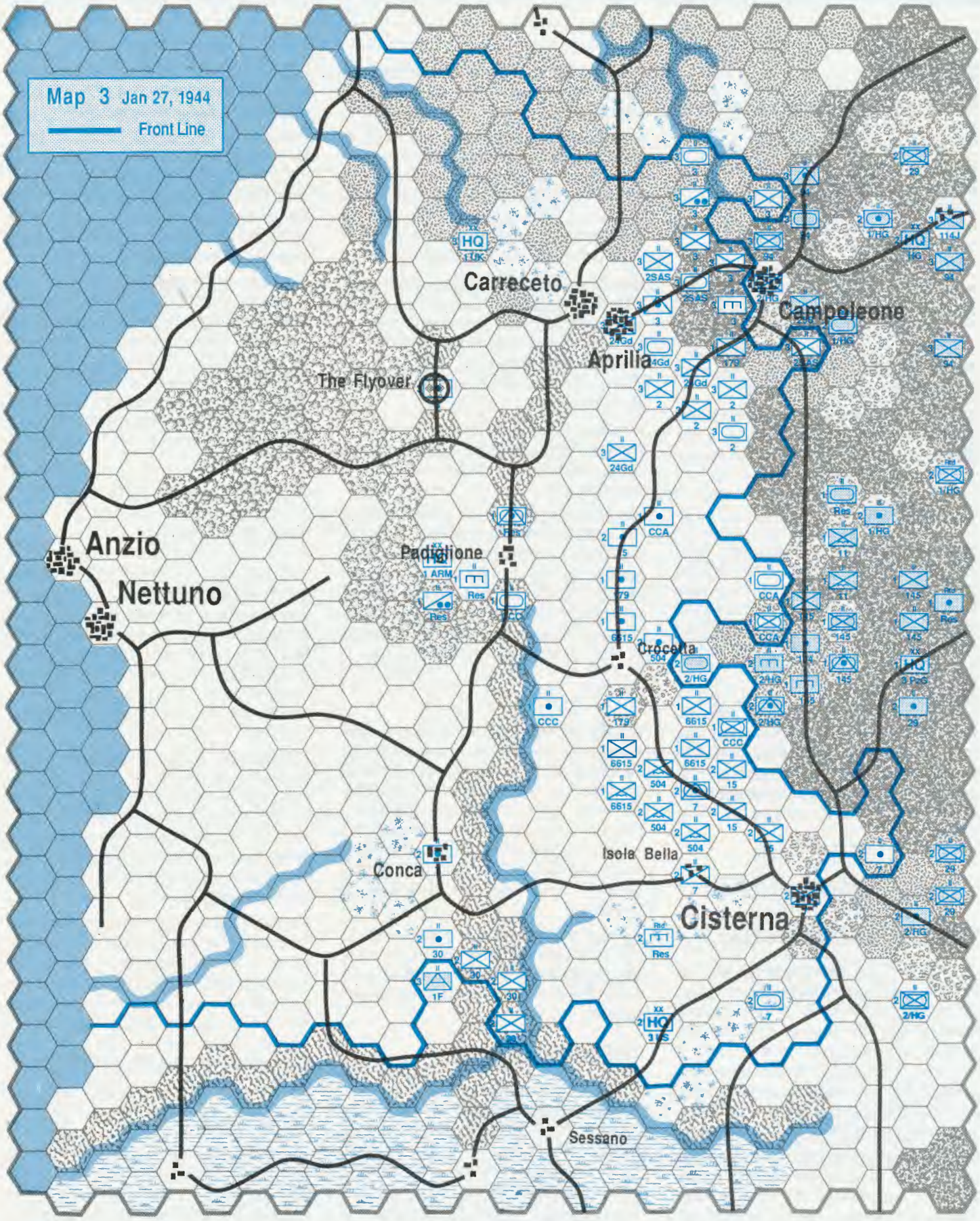
The British are pushing on for Campoleone, but are being contained by the HG. However, they are able to exert tremendous pressure that must eventually tell on the Germans. The Axis have been defeated in the middle are are struggling to maintain north-south communications. There just do not seem to be enough men to mount a proper defence of Cisterna.

General von Trout has given up on the *Luftwaffe* (last heard of conducting night navigation exercises north of Rome). A plan to reinforce his last courtesy call with some Mark V's was cancelled as they were needed at the front. General von Trout, in what will be a real test of his connections, has decided to pray for rain.

General Keating is having no problems with his planes. Rumours now abound of a lottery for pilots, with one ticket being awarded for each successful sortie over Anzio. Further rumours state that the prize is not money, but nurses. Surely the upright General Keating would never stoop so low? Something has to explain the Allied air success.

THE PLAN

ALLIED. The US Armoured division is to mop up and consolidate its position in the centre. The US infantry are to push on and take Cisterna. The main thrust will be come from the British who are to keep up a relentless


Map 3 Jan 27, 1944
Front Line
Carreceto
Aprilia
Campoleone
The Flyover
Anzio
Nettuno
Padiglione
Cisterna
Conca
Isola Bella
Sessano

pressure on the defenders of Campoleone.

AXIS. The 71st Infantry division starts to arrive tomorrow. We must just hang on till then. If we can't find any more men, we will have a requirement for a large number of scapegoats.

THE RESULTS

The defenders of Cisterna are overwhelmed. Axis counter-attacks fail to relieve the situation and the US infantry pushes on. The Axis 71st Infantry division starts to arrive, just in time to take up the defence of Campoleone from the battered HG.

The Allies are across the final Campoleone-Cisterna road link and the last of the southern Axis forces are being herded into the hills behind the road. A night attack catches the 1/HG on the hop as they try to retire and another Axis unit routs. Late in the day, von Trout plays his last card as he starts his end run in the south with his lone battalion.

27th January 1944

THE SITUATION (See Map 3)

The 71st Infantry division is the only formation that can influence the course of the remainder of the battle. It holds Campoleone but the British are outflanking it north and south. Cisterna is beyond recall for the Germans and the remainder of their forces have been pushed into the hills along the eastern map edge. It is hard to see anything stopping the Allies, unless von Trout's request for rain is answered. The current forecast is stormy, a promising beginning.

A brief examination of the map tells everything. Von Trout's men are scattered from one to the other with no regard for divisional, or even regimental, boundaries.

Keating's troops are for the most part in good order. With the situation well in hand, hard-worked elements of the US 1st Armoured have been pulled back to Padiglione for a breather.`

THE PLAN

ALLIED. The push for Campoleone must continue, despite the arrival of fresh Axis troops. The US Armoured, which moved during the night to keep the Germans in the hills pinned down, are now in bad shape. Their job is to contain the Germans, and they will be sacrificed if necessary to complete this jou. The US Infantry will push north, also in a containment role. One regiment has been detailed to clean up von Trout's sneaker, whose presence was no surprise. We can now afford to reserve significant numbers of troops.

AXIS. The 71st must counter-attack at Campoleone, in order to stabilise the situation. The forces to the south must also counter-attack, in the hope that Keating's troops are in bad shape and can be kept off balance. Another Chief of Staff must be sacked. The future is also not bright for those divisional commanders who, contrary to my strict orders, got their men caught in the wrong positions and crushed. The Korps and Divisional AA units have been instructed not to wait for aircraft recognition before opening fire. There is a very small, but still satisfying, chance of them firing on a *Luftwaffe* plane.

THE RESULTS

The Axis counter-attack with the 71st fails and the 94/71 take no ground, only losses. The bad weather turns up in the middle of the day but even in heavy overcast Keating's enthusiastic flyers are active. They sure are motivated by something. The inevitable occurs and the Allies storm into Campoleone on the P.M. turn. Scattered Axis counter-attacks wing a few Allied units but there seems no hope now.

28th January 1944

THE SITUATION (See Map 4)

The weather turns dirty at last, but it is too late. Unfortunately for von Trout, Keating is not the sort of general to call off play on account of rain. Rather unsporting, but then, so was Poland. General von Trout knows that the game is up and he prepares his last ditch defence. This consists of the heads of his two ex-Chiefs of Staff and those of his divisional commanders for presentation to OKW.

He is also in a position to lay considerable blame at the feet of the *Luftwaffe*, especially as the Herman Goering is(or was) a *Luftwaffe* division. This tactic always goes down well with the *Wehrmacht*. As General von Trout heads off into the gathering storm, he repeats to himself the words that form the refrain of the entire *Wehrmacht*; "Nur nicht Russland", (just not Russia).

The totally victorious General Keating has few worries. He can declare the bars open and pick the winning tickets in the lottery. Churchill owes him one and it's more mud in the eye for the Empire types at GHQ. A handsome result for a few days work.

The final map (overleaf) shows the completeness of Keating's victory. Rather than contest von Trout's counter-attack at Crocetta, Keating has chosen to drive a wedge to the eastern board edge just south of Campoleone. Local intelligence had informed him of the incredible disarray of the German organization so that cutting communications between von Trout's forces would be sure to cause diaster.

THE FINAL RESULT

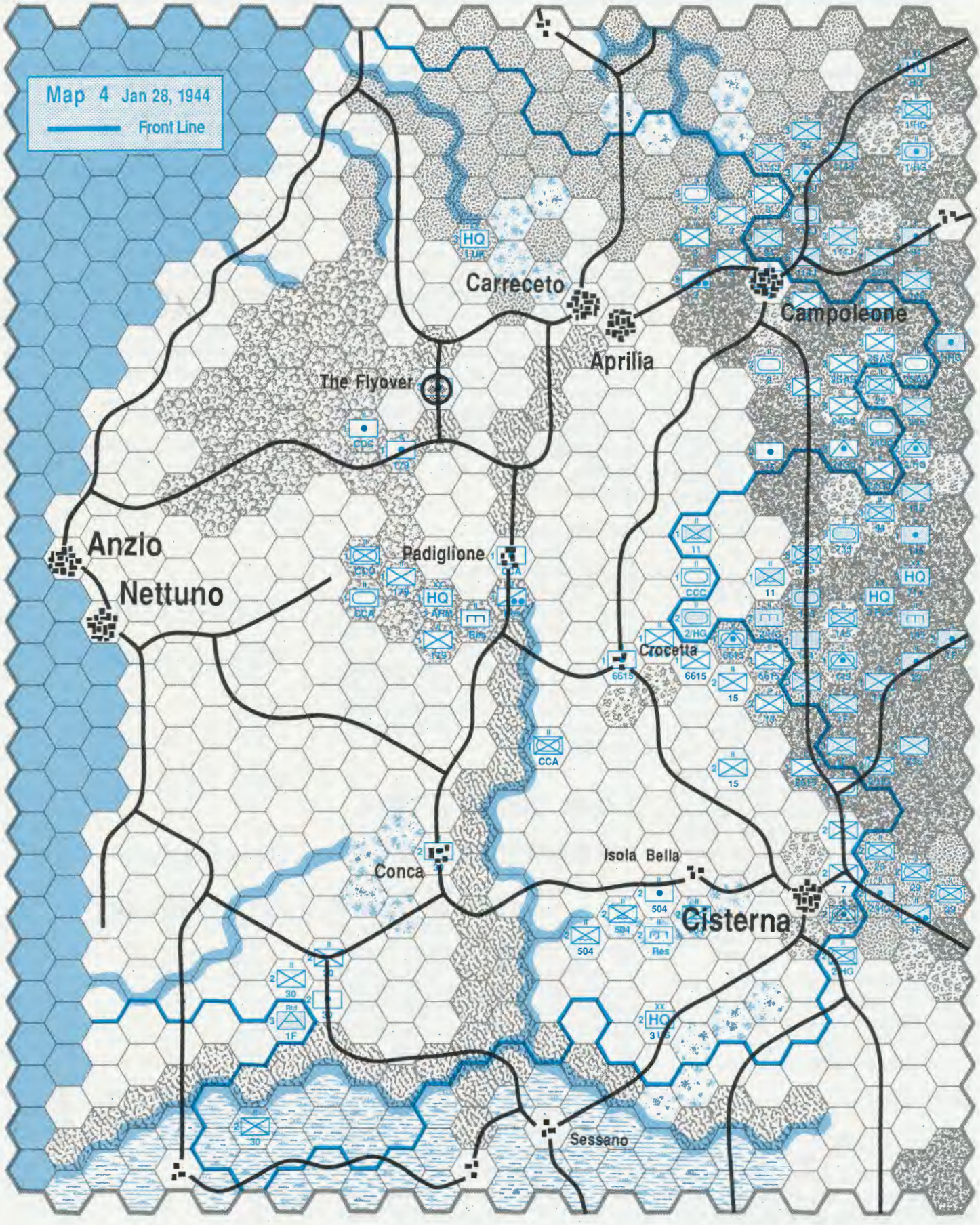
When General von Trout conceded, General Keating controlled every objective on the board and led by 1024 VPs to 577.

That makes it three in a row for Keating!

SCORE CARD

Allied Losses

Axis Losses


Map 4 Jan 28, 1944
Front Line
Carreceto
Aprilia
Campoleone
The Flyover
Anzio
Nettuno
Padiglione
Crocetta
Conca
Isola Bella
Cisterna
Sessano

MORE QUESTIONS (More Answers. . .)

A BIT OF A MISTAKE

Before answering questions, I'd like to clear up an embarrassing mistake.

Malcolm Power designed the Anzio scenario in Issue 5 and handed this Editor a completed disk and the historical article. I thought the road network, though historical, was a bit messy and decided to tidy it up a bit. I made the changes on a backup disk and then prepared the artwork for the map. There was no effect on the play of the game from one road orientation to the other.

Anyway, to cut a long story short, I confused the backup with Malcolm's original master and so the original road network is the one on the scenario disk.

To complicate the issue further, Malcolm subsequently accused me of altering the play balance by changing the roads. I assured him I hadn't, and anyway I was the boss and that was that.

The final humiliation, of course, came shortly afterwards. I argued that if there was any bias between the versions, then the Axis had a slightly better chance with the original road network.

Roger and I fought it out (as reported elsewhere in this issue) using the original road net. My abysmal defeat while in command of the German forces rather made mincemeat of my argument.

Whatever, those with the scenario can alter the roads to correspond with the map, but it's not going to have much effect.

There were a couple of other minor inaccurracies (about our usual quota) but, again, they were not significant. **The house rule is that the data in the magazine is correct.** If there's a mistake there, we'll tell you.

One of the most satisfying features of our design kits is that when we make this kind of error, it can so easily be corrected. We do try to get the data right. . .

SOME QUESTIONS

Q. What are the relative Attack and Defense strengths of ships and PDB's in RFTS?

A. Attack/Defense MK I 1/1, MK II 2/1, MK III 4/2, MK IV 8/2.

Q. What is the chance of a Nova occurring in RFTS?

A. The chance of a Nova is 1/64. In any one turn a star in a Nova condition has a 25% chance of exploding, a 25% chance of getting better and a 50% chance that nothing happens.

Q. Are your games compatible with the new Apple IIGS?

A. All games produced so far are 100% compatible. All future product is intended to be.

Q. How do you abort a standing patrol in EA?

A. The only way to affect the status of a standing patrol is to have it intercept something. Otherwise it stays up all day.

Q. How do you decide the number of veteran and experienced pilots in creating a EA scenario?

A. The only sensible way to do it is to judge, on an overall basis how experienced the pilots were. For instance in the Zitadelle scenario the German fighter pilots are almost all elite or veteran, bomber pilots less experienced but still well ahead of the Russians, with the possible exceptions of Guards fighter units. Using a determination such as this as a guide, either make up or roll a dice for the actual numbers.

Q. How can all ships in a CAW task force have the same endurance when minor ships such as destroyers have a much lower endurance than capital ships?

A. It is assumed for game purposes that minor ships refuel on the run from capital ships in the same task group. However, minor ships operating entirely on their own should not have more than 15 - 20 days endurance.

Q. What are the F4U aircraft supposed to do in the Philippine Sea scenario in Carriers at War? They arepresent as the third entry in the plane types data base, but there is no record of them anywhere else.

A. Nothing. Because of the small number present and the desperate need for extra squadrons, we deleted them from the OB early in the scenario's development. They were left in by mistake.

Q. In EA squadrons are stood down according to their fatigue and the current activity level. Why are squadrons with the same fatigue level treated differently, some being stood down and others allowed to fly?

A. There are actually eight levels of fatigue in EA. For display purposes and to relieve the burden of detail on the player, these are reduced to the four words 'exh'd', 'tired', 'fit' and 'fresh'. On activity level 2, only the exhausted squadrons will be stood down. On activity level 1, tired and exhausted squadrons will be stood down. On activity level 0, only fit and fresh squadrons with at least 65% operational aircraft will be available for employment.

Q. How can I get the computer controlled Japanese to attack the American carriers at Midway. They seem to usually prefer attacking Midway itself, even though it has been pulverised already?

A. The reluctance to attack is caused by the computer's targeting priorities. One priority is to deal with land based air. Another priority is to protect an invasion force. In the Midway scenario these render the Japanese rather cautious towards the American carriers.

There are a number of possible solutions. Try reducing the number of squadrons on Midway although it may be necessary to remove the airbase altogether. Removing the invasion force should free up the carriers. Alternatively, retain the invasion force but make Midway a Japanese port. This makes the transports' mission an ordinary one, rather than an invasion. This assumes that you start things a little later, after messy tasks like the reduction of Midway have occurred.

Q. What are the correct keys for terrain types and features in Battlefront?

A. Towns are created by typing (C). (It used to be (C)ity). Type (R) for roads, (F) for forts and (X) for minefields.

Q. What effect do minefields have in Battlefront?

A. Minefield hexes increase the fatigue of units that move through them. A message is printed when a minefield is eventually cleared.

Q. What is the meaning of the 'ADJACENT CONTROLLED HEX PENALTY' and 'MECH MIN' in Battlefront?

A. The 'ADJACENT CONTROLLED HEX PENALTY' is the number of extra movement points paid for entering a hex surrounded by the specified number (between 1 and 6) enemy hexes. It is used to control the ease of advance into enemy controlled territory.

'MECH MIN' is the minimum mechanised movement rate, all units with this or a greater movement allowance are treated as mechanised by the game routines i.e. pay mechanised terrain costs. All HQ units use the 'MECH MIN' rate for movement.

Q. The printed map does not corespond to the program map for the Crete and Anzio scenarios. What should I do.

A. Blame Ian Trout. And read the first part of this section.

Q. What is the secret keystroke to stop the computer while it is playing all sides in a game (i.e. running on automatic)?

A. Pressing (ESC/f1) while the computer displays the 'running' message will halt the game. You can examine various menus and select the appropriate <RUN> line to restart.

GENERAL NOTES

A few people have asked if there is any restriction on the number of scenarios that may be entered in the *Battlefront* design contest. The answer is no. We would be pleased to look at any number that you can send us.

Continued on p.48

Here's Another Chance to Turn Your Creative Talent to Cash. . .

BATTLEFRONT

SCENARIO CONTEST

A prize of $1,500 will be awarded to the best *Battlefront* scenario to reach us before June 30th, 1987.

There is no restriction as to subject matter, size or anything else. All we require is that you submit your entry on a floppy disk together with a typed briefing for the scenario.

The judges' decision will be final, no correspondence will be entered into, etc.

The winning scenario will be published in Issue 8. All entries become the property of SSG and may be used for publication at any time. A payment of $100 will be made to the author of any scenario, other than the winning one, chosen for publication.

All submissions must be sent to our Australian office (see page 2) and overseas entrants are advised to wrap the disk in foil as a precaution against magnetic erasure. Send in as many entries as you like.

Available from June 6th

BATTLES IN NORMANDY

June - July, 1944

Featuring the battles of Omaha, Utah, Sword, Cherbourg, Carentan, Villers Bocage, Goodwood and Epsom

For Apple II family and Commodore 64/128 computers

NOVOROSSIK

Stalemate on the Black Sea 3rd - 12th February, 1943

A SCENARIO FOR BATTLEFRONT

By Ian Trout

In February of 1943, the Russians mounted their first amphibious invasion of the war. Operation Morsky *was to be a combined land and naval offensive with the objective of capturing the port of Novorossik before rolling up the coast to Anapa and from there cutting the German line of retreat from the Taman Peninsula.*

The operation began badly; and did not get better. Were it not for the successful establishment of a beachead at Alexina, the effort would have been a complete waste. Could more have been achieved? Or did the Russians do all that was possible with their very limited resources?

THE SITUATION

The German summer offensive of 1942 achieved a level of success similar to the opening months of the war. The Soviet forces deployed from Voronezh to the Black Sea were so severely mauled that no effective resistance was mounted against the German exploitation until the closing months of 1942, when German spearheads had reached the Caucasus Mountains, the Maikop and Grozny oil-fields, the outskirts of Stalingrad and the verge of the Caspian Sea.

Western military opinion, particularly that of Churchill, again wrote off the Russians, just as they had the previous year when the panzers were at the gates of Moscow. They were even more in error this time!

In late November of 1942, the Soviet counter-attacks went in. The most significant success was the envelopment and eventual destruction of von Paulus' 6th Army at Stalingrad. Elsewhere, south of Stalingrad, the Germans were relentlessly driven back, in considerable disorder. The axis of the Russian advance precluded the chance to trap major parts of the German 17th Army which staggered back to the relative safety of the Taman Peninsula and the depots at Anapa and Krasnodar.

Unwilling to surrender the initiative, Soviet armies continued to press the foe, heedless of their dwindling resources and ever-lengthening supply lines.

German resistance stiffened. Most of Army Group A slipped through the Rostov Gap before the Russians could close it. Along the Black Sea Coast a combination of good defensive terrain, secure supplies and the general exhaustion of the advancing Russians, stalled and finally stopped the Russian drive on the outskirts of the port of Novorossik.

The Soviet plan to recapture the entire Taman Peninsula, simultaneously destroying all of 17 Army, received the codename *Gory-Morsky*.

Operation *Morsky*, the naval component of the offensive, was designed to capture Novorossik, primarily through the use of an amphibious invasion behind the German front line. With the fall of the town, the assaulting forces would advance along the coast, overwhelm the depot at Anapa and then drive northwards to prevent a German escape across the Kerch Straits.

The plan was overbold. The elements of the 47th Army available to launch the overland attack on Novorossik were already tired, some units were exhausted, from earlier attempts to break the German positions. Supplies of all types, but particularly artillery ammunition, were scarce.

The amphibious forces were no better off. With Odessa, Sevastopol and Novorossik in German hands, the Russians had no proper naval facilities for the remaining units of the Black Sea Fleet. Perforce, they used the bombardmant capability of their two operational cruisers and five destroyers with understandable caution. Severely damaged warships just could not be repaired.

A miscellaneous collection of gunboats, minesweepers, patrol boats and self-propelled barges were assembled to transport the three marine brigades and supporting units which would make up the two waves of the invasion force. They could not be assembled on time.

The landward offensive got underway on February 3rd, one day ahead of the proposed amphibious assault. By early afternoon, what little impetus the attack had achieved was already lost. The 47th Army could not make any impression on the fortified defenders from the German V Korps.

In the early hours of February 4th, paratroopers from the 90th Special Landing Force, supported by air strikes, dropped at Vasilevka and Glebovka. The main landing site, a little beach to the south of Yuzhnaya Ozereyka, was protected by several shore batteries which, unaffected by the preliminary naval bombardment, opened up a withering fire on the approaching transports. Many were sunk or damaged. Some troops did get ashore and eventually drove the Rumanian defenders from the town.

Fortunately, events developed more favourably at the secondary invasion site; the town of Alexina.

In the next three days, Axis reinforcements, including a *Kampfgruppe* from the 13th Panzer Division, cleaned up all but the beachead at Alexina, now stiffened by the survivors of the abortive landing at Yuzhnaya Ozereyka and the arrival of a fresh brigade, brought in by night across Tsemesskaya Bay.

Both sides did what they could to build up their forces; not much in either case, given the demands of other, and more important, sectors. A German counter-attack on the 12th reduced the Soviet perimeter but at a terrible cost and it was not until April, some two months later, and with the arrival of the 4th Mountain Division, that another attack was mounted. It also failed.

In September the deadlock was broken. A Soviet offensive aimed at Mefodyevka in conjunction with an amphibious assault on Novorossik itself, crushed the brittle German defense and reunited the *Malya Zemla* (Little Land) with the mainland. The Russian beachead had survived for 225 days.

THE SCENARIO

The Soviet amphibious landing at Novorossik was more akin to the Commonwealth invasion at Gallipoli in the First World War than to Western Allied amphibious operations of the Second World War. The preparatory bombardment was completely inadequate. The absence of specialized, amphibious landing craft exposed the invading troops to additional danger and, as it transpired, death.

Accurate shore battery fire reduced the Yuzhnaya Ozereyka landing force to remnants and to represent this in game terms, the strengths of the units concerned have been accordingly lowered.

The off-board support points available to both sides are a combination of air bombardment capability and heavy artillery emplacements. The larger struggle occurring some ninety miles north at Krasnodar was responsible for siphoning off the bulk of both air forces with the consequence that neither side could obtain air superiority, or anything like it, over Novorossik.

The large, off-board support value awarded to the Russians at night represents the naval bombardment capability of the Black Sea Fleet.

Soviet strategy is straight-forward, at least in the opening days. The 318th XX and 3rd XXX formations do not have the resources to break the German position east of Novorossik in a direct assault. They can, however, chip away and hope to eventually weaken their numerically inferior opponent. The real challenge comes on the second day. What you do with the invasion forces in the next couple of turns will have a tremendous impact on the course of the battle.

The Cossack and Rumanian garrison opposing the landing force does not become active until the second day and are not much good in a fight. What will cause you grief is the *Kampfgruppe* from the 13th Panzer XX and the experienced 125th Infantry XX. Secure as large a perimeter as you can with your base at Alexina and reserve the bulk of your support points to protect it. You will have to give some ground but if you can hang on to both Myshako and Alexina, then you'll be well on the way to a victory.

The Axis forces face a classic dilemma. Their forces have a qualitative superiority but in the face of superior numbers, it becomes very difficult to employ then decisively. You must hold the fortified line east of Novorossik; if the Russians break out, the VPs they will earn from the capture of Mefodyevka, Markotkh Pass or Neberjayevskaya will make defeat all but certain. Barring atrocius luck, the line should hold.

The threat posed by the Soviet marines is of more concern. The invasion has to be contained without delay. Yuzhnaya Ozereyka must be recaptured immediately and a two-pronged drive, from the north and west, mounted against Myshako. It is very difficult to completely erase the beachead. Capturing Myshako, however, should be enough to earn a victory provided a disaster hasn't occurred to the 73rd XX.

SOME VARIATIONS

There are two interesting what-ifs associated with this battle. Experiment with them as you see fit, keeping in mind that they will seriously alter the balance of the game.

1. Successful Landing. We can assume that the main Soviet landing went in without the crippling casualties actually suffered. Increase the strengths of the following units to the value given in brackets after the unit I.D. 1/255 (10), 2/255 (10), 3/255 (10), Sup/255 (7), 563 Tk Bn (8)

2. Fresh Assault. The troops of the 318th XX and 3rd XXX were already tired when the operation began. Assume they were fully rested and properly supplied. Increase the admin and supply values of the following HQs to the values given in brackets after the HQ I.D. 3 Corps HQ (4,7), 9 Bde HQ (4,7), 60 Bde HQ (5,7), 155 Bde HQ (4,7), 318 Div HQ (4,7), 1331 Rgt HQ (6,7), 1337 Rgt HQ (7,7), 1339 Rgt HQ (6,7). Increase the fatigue value of all units in the above formations to 7.

AUTHOR'S NOTE

Some years ago, Jack Radey published a splendid board game on this topic, *Black Sea, Black Death.* I am considerably indebted to Jack's meticulous research in the preparation of this scenario. ◆

NOVOROSSIK - Briefing

AXIS	ALLIED
SIDE [16]: GERMANY	SIDE [16]: SOVIET UNION
CORPS [16]: V CORPS	CORPS [16]: 47 ARMY
COMMANDER [16]: General Wetzel	COMMANDER [16]: General Kamkov

DAY	NIGHT	SUPPORT	DAY	NIGHT
18	8	QUANTITY (0-99)	25	33
3	1	RELIABILITY (0-3)	3	2
12	12	RATING (0-15)	10	10

AIR SUPERIORITY (0-7)

STATUS = 4
RELIABILITY = 2

WEAK ALLIED
VARIABLE

SCENARIO [16]: NOVOROSSIK

BRIEFING [26]: Stalemate on the Black Sea Coast
3rd - 12th February, 1943

START DATA

(1-31)	DATE =	3	3rd FEB 1943
(1-12)	MONTH =	2	
(0-63)	YEAR =	43	
(1-16)	LENGTH =	10	
(0-3)	WEATHER =	3	CLEAR
(0-7)	FORECAST =	7	CLEARING
(0-31)	MECH MIN =	10	

NOVOROSSIK - Terrain Effects Chart

TERRAIN CODE (T0-T15)	TERRAIN NAME [10]	TERRAIN COSTS PER HEX		ATTACK EFFECTS		
		MECH (0-31)	NON-MECH (0-31)	ARM (0-7)	ART (0-7)	INF (0-7)
T0	OCEAN	0	0	0	0	0
T1(RET)	CLEAR	1	1	7	7	7
T2	WOODED	2	1	6	6	7
T3	SLOPE	3	2	6	6	6
T4	WOOD/SLOPE	4	2	4	5	5
T5	WOOD/ROUGH	6	3	2	3	4
T6	-	-	-	-	-	-
T7	CLIFFS	0	8	0	4	4
T8	-	-	-	-	-	-
T9	CEMENT WKS	1	1	4	4	4
T10	MOUNT TOPS	0	8	0	3	4
T11	MUD BATHS	1	1	4	4	4
T12	-	-	-	-	-	-
T13	-	-	-	-	-	-
T14	FISH CAN'Y	1	1	4	4	4
T15	-	-	-	-	-	-
-	ROAD	1	1	N.A.	N.A.	N.A.
-	FORT	N.A.	N.A.	2	2	3
-	TOWN	N.A.	N.A.	3	3	4
-	BRIDGE	1	1	4	7	5
-	RIVER	N.A.	4	4	7	4

NOVOROSSIK - Objectives

I.D. (1-24)	NAME [11]	MAP LOC [x,y]	START (0-63)	END (0-63)	POINTS PER TURN (0-30)	POINTS AT END (0-255)
1(AX)	Krasnomed'a	1,1	1	39	1	5
2(AX)	Vasilevka	12,15	1	39	1	5
3(AX)	Yuzhnaya	9,22	1	39	1	5
4(AX)	Myshako	22,24	15	39	2	15
5(AX)	Alexina	25,23	17	39	5	50
6(AX)	Novorossik	23,16	1	39	1	5
7(AX)	Mefodyevka	23,13	1	39	1	5
8(AX)	Kirilovka	18,9	1	39	1	5
9(AX)	Verkne-B.	11,0	1	39	1	5
10(AX)	Neberjav'a	35,0	1	39	1	5
11(AX)	Hill 634	34,9	1	39	2	10
12(AX)	Kabardinka	38,23	1	39	5	50
1(AL)	Kabardinka	38,23	1	39	1	5
2(AL)	Cement W'ks	28,15	1	39	2	15
3(AL)	Hill 634	34,9	1	39	3	25
4(AL)	Neberjav'a	35,0	1	39	10	75
5(AL)	Mark'h Pass	25,8	1	39	5	50
6(AL)	Mefodyevka	23,13	1	39	5	50
7(AL)	Kirilovka	18,9	1	39	10	75
8(AL)	Novorossik	23,16	1	39	10	75
9(AL)	Alexina	25,23	1	39	5	50
10(AL)	Myshako	21,20	1	39	10	75
11(AL)	Yuzhnaya	9,22	1	39	10	75
12(AL)	Vasilevka	12,15	1	39	10	75

NOVOROSSIK - Miscellaneous Factors

ADJACENT ENEMY HEX PENALTY (0-15)

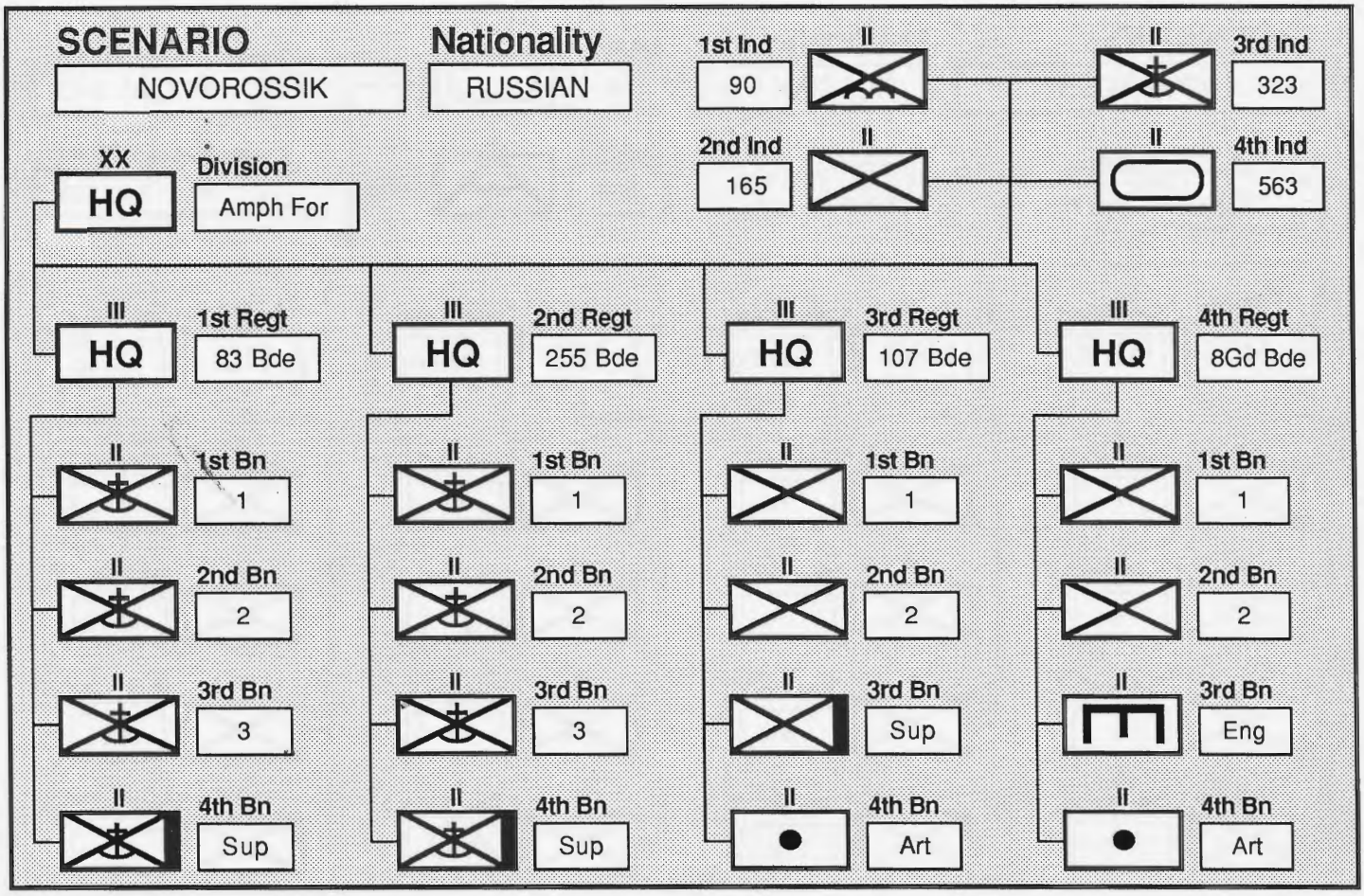
1st HEX =	1	4th HEX =	4
2nd HEX =	2	5th HEX =	4
3rd HEX =	2	6th HEX =	4

VICTORY POINTS PER STRENGTH POINT LOST (0-15)

	MECH	NON MECH
AXIS	5	3
ALLIED	4	2

MAP SIZE

ACROSS (0-2)	2
DOWN (0-3)	3

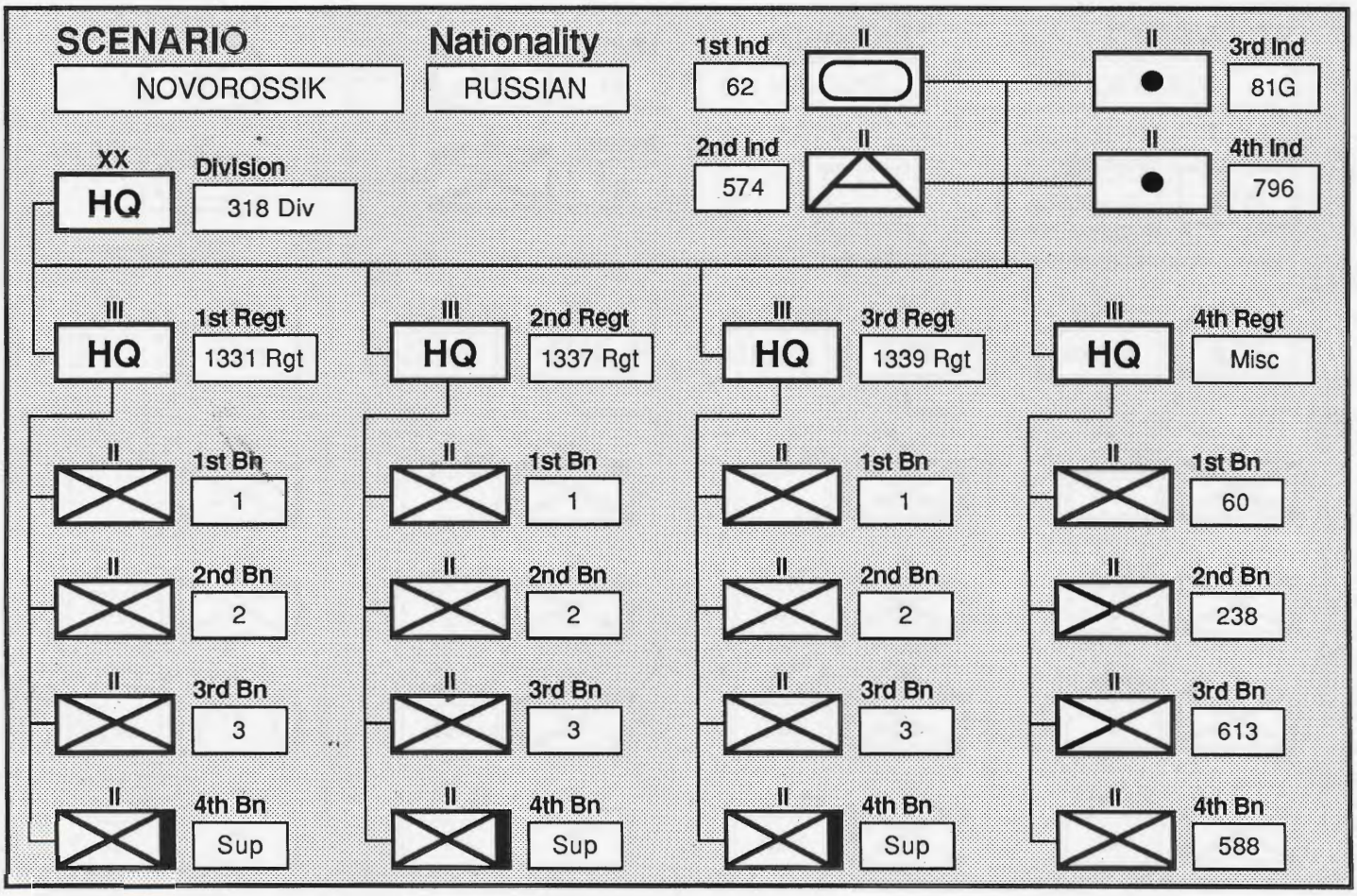


HEADQUARTERS DATA

FORMATION		XX HQ	1/RHQ	2/RHQ	3/RHQ	4/RHQ
HQ I.D.	[8]	Amph For	83 Bde	255 Bde	107 Bde	8Gd Bde
UNIT TYPE	[8]	MARINE	MARINE	MARINE	INFANTRY	GUARDS
HQ ADMIN	0-7	3	3	3	4	5
LEADERSHIP	0-7	7	5	3	4	6
HQ SUPPLY	0-7	2	7	4	7	7
ARRIVAL	0-63	7	N/A	N/A	N/A	N/A
LOCATION	(x,y)	26,22	N/A	N/A	N/A	N/A

BATTALION DATA

FORMATION	I/II	1/1	2/1	3/1	4/1	1/2	2/2	3/2	4/2	1/3	2/3	3/3	4/3	1/4	2/4	3/4	4/4	1/-	2/-	3/-	4/-
UNIT I.D.	[3]	1	2	3	Sup	1	2	3	Sup	1	2	Sup	Art	1	2	Eng	Art	90	165	323	563
LOCATION	(x,y)	26,23	25,24	24,25	26,22	11,24	7,24	8,24	9,24	26,22	26,23	24,25	25,24	24,25	25,24	26,23	26,22	11,16	26,23	26,23	10,24
CLASS	0-13	0	0	0	4	0	0	0	4	0	0	4	13	0	0	7	13	0	0	0	11
MODE	0-3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	3	3	3
EQUIPM'T	0-31	2	2	2	4	2	2	2	4	1	1	4	10	1	1	16	8	3	1	2	15
MOVEMENT	0-31	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	4	6	5	5	10
STRENGTH	0-15	9	8	9	7	4	5	3	4	14	15	7	3	14	14	9	4	12	14	10	3
RATING	0-15	8	8	8	9	8	8	8	9	8	8	9	10	9	9	10	9	8	8	8	9
RANGE	0-15	0	0	0	1	0	0	0	1	0	0	1	11	0	0	0	8	0	0	0	1
ARRIVAL	0-63	7	7	8	8	5	5	5	5	23	23	24	24	31	31	32	32	4	11	4	5
FATIGUE	0-7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
EXPERIENCE	0-7	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	4	3	5	2
ATTACHM'T	0-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	1	1	2

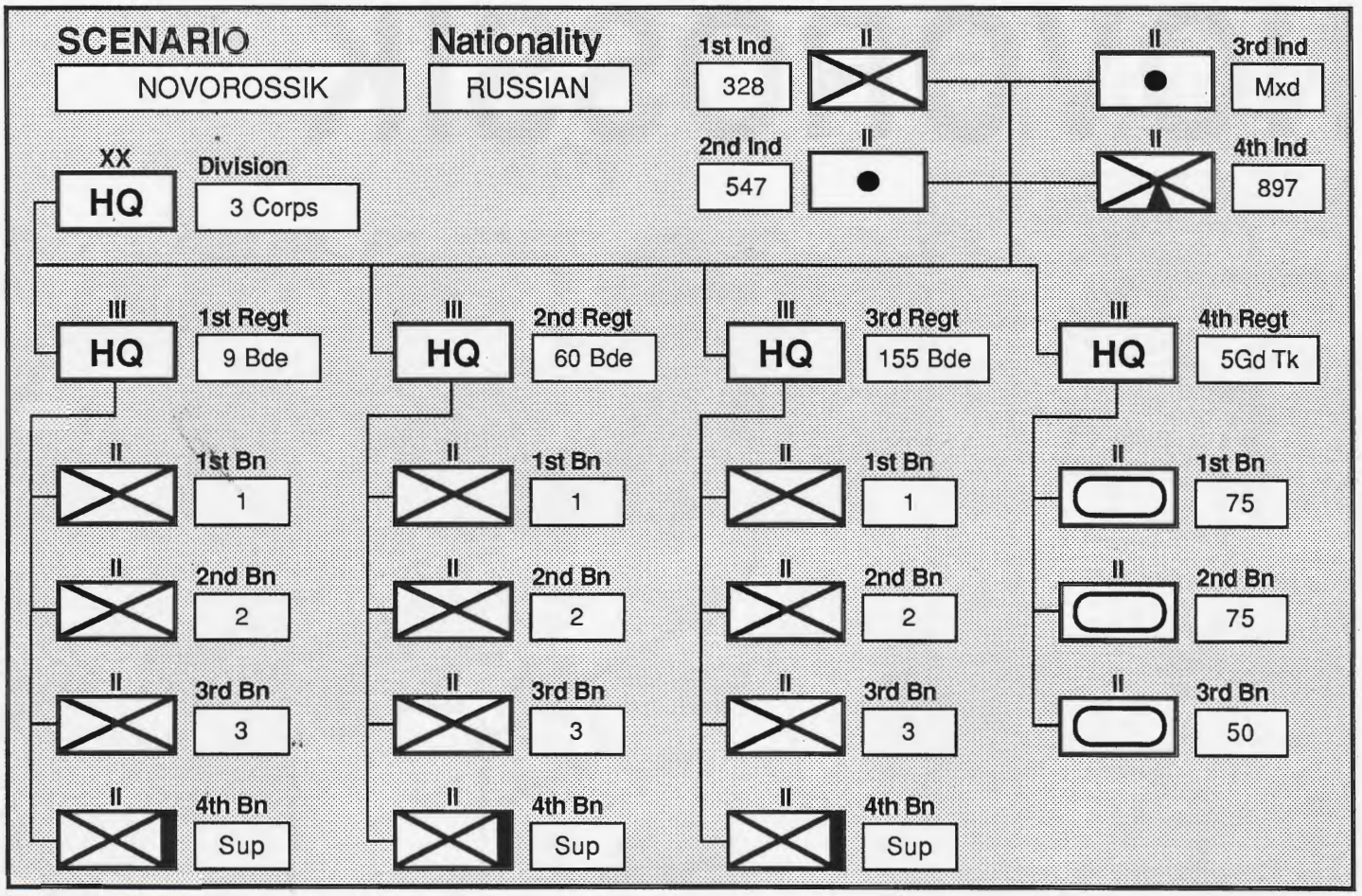


HEADQUARTERS DATA

FORMATION		XX HQ	1/RHQ	2/RHQ	3/RHQ	4/RHQ
HQ I.D.	[8]	318 Div	1331 Rgt	1337 Rgt	1339 Rgt	Misc
UNIT TYPE	[8]	INFANTRY	INFANTRY	INFANTRY	INFANTRY	STAT/PUN
HQ ADMIN	0-7	4	4	4	4	2
LEADERSHIP	0-7	6	5	6	4	2
HQ SUPPLY	0-7	3	3	3	3	6
ARRIVAL	0-63	0	N/A	N/A	N/A	N/A
LOCATION	(x,y)	32,18	N/A	N/A	N/A	N/A

BATTALION DATA

FORMATION	II/III	1/1	2/1	3/1	4/1	1/2	2/2	3/2	4/2	1/3	2/3	3/3	4/3	1/4	2/4	3/4	4/4	1/-	2/-	3/-	4/-
UNIT I.D.	[3]	1	2	3	Sup	1	2	3	Sup	1	2	3	Sup	60	238	613	588	62	574	81G	796
LOCATION	(x,y)	31,12	31,13	30,13	31,14	32,16	33,16	32,17	33,17	29,15	28,15	29,14	29,16	38,23	38,23	38,23	38,23	38,23	38,23	34,19	33,18
CLASS	0-13	0	0	0	4	0	0	0	4	0	0	0	4	0	0	0	0	11	8	13	13
MODE	0-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EQUIPM'T	0-31	1	1	1	4	1	1	1	4	1	1	1	4	17	17	12	12	15	14	13	11
MOVEMENT	0-31	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	5	10	6	3	4
STRENGTH	0-15	9	6	8	6	7	8	6	7	5	7	6	5	7	8	4	6	7	12	9	6
RATING	0-15	8	8	8	9	8	8	8	9	8	8	8	9	6	6	4	5	7	6	11	8
RANGE	0-15	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	1	15	11
ARRIVAL	0-63	0	0	0	0	0	0	0	0	0	0	0	0	9	9	10	9	17	33	0	0
FATIGUE	0-7	3	3	3	3	5	5	5	5	3	3	3	3	7	7	7	7	7	7	5	3
EXPERIENCE	0-7	5	5	5	5	5	5	5	5	5	5	5	5	3	3	2	3	3	4	5	5
ATTACHM'T	0-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	2	1	3



HEADQUARTERS DATA

FORMATION		XX HQ	1/RHQ	2/RHQ	3/RHQ	4/RHQ
HQ I.D.	[8]	3 Corps	9 Bde	60 Bde	155 Bde	5Gd Tk
UNIT TYPE	[8]	INFANTRY	INFANTRY	INFANTRY	INFANTRY	TANK
HQ ADMIN	0-7	3	3	4	3	4
LEADERSHIP	0-7	4	3	5	4	5
HQ SUPPLY	0-7	3	3	3	3	7
ARRIVAL	0-63	0	N/A	N/A	N/A	N/A
LOCATION	(x,y)	36,12	N/A	N/A	N/A	N/A

BATTALION DATA

FORMATION	II/III	1/1	2/1	3/1	4/1	1/2	2/2	3/2	4/2	1/3	2/3	3/3	4/3	1/4	2/4	3/4	4/4	1/-	2/-	3/-	4/-
UNIT I.D.	[3]	1	2	3	Sup	1	2	3	Sup	1	2	3	Sup	75	75	50		328	547	Mx	897
LOCATION	(x,y)	33,10	33,11	33,12	34,12	34,10	35,9	34,11	35,10	37,9	36,10	38,10	37,10	38,23	38,23	38,23		36,13	37,14	36,14	38,23
CLASS	0-13	0	0	0	4	0	0	0	4	0	0	0	4	11	11	11		0	13	13	0
MODE	0-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
EQUIPM'T	0-31	1	1	1	4	1	1	1	4	1	1	1	4	5	5	6		12	11	11	7
MOVEMENT	0-31	6	6	6	6	6	6	6	6	6	6	6	6	12	12	10		5	4	4	7
STRENGTH	0-15	7	6	7	8	8	7	5	6	7	8	6	7	8	8	5		6	7	5	15
RATING	0-15	8	8	8	8	8	8	8	9	8	8	8	9	12	12	7		4	8	8	9
RANGE	0-15	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1		0	11	11	0
ARRIVAL	0-63	0	0	0	0	0	0	0	0	0	0	0	0	35	35	33		0	0	0	17
FATIGUE	0-7	2	2	2	2	2	2	2	2	2	2	2	2	7	7	7		5	4	3	7
EXPERIENCE	0-7	4	4	4	4	5	5	5	5	4	4	4	4	6	6	3		2	5	3	6
ATTACHM'T	0-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	2	1	2

NOVOROSSIK

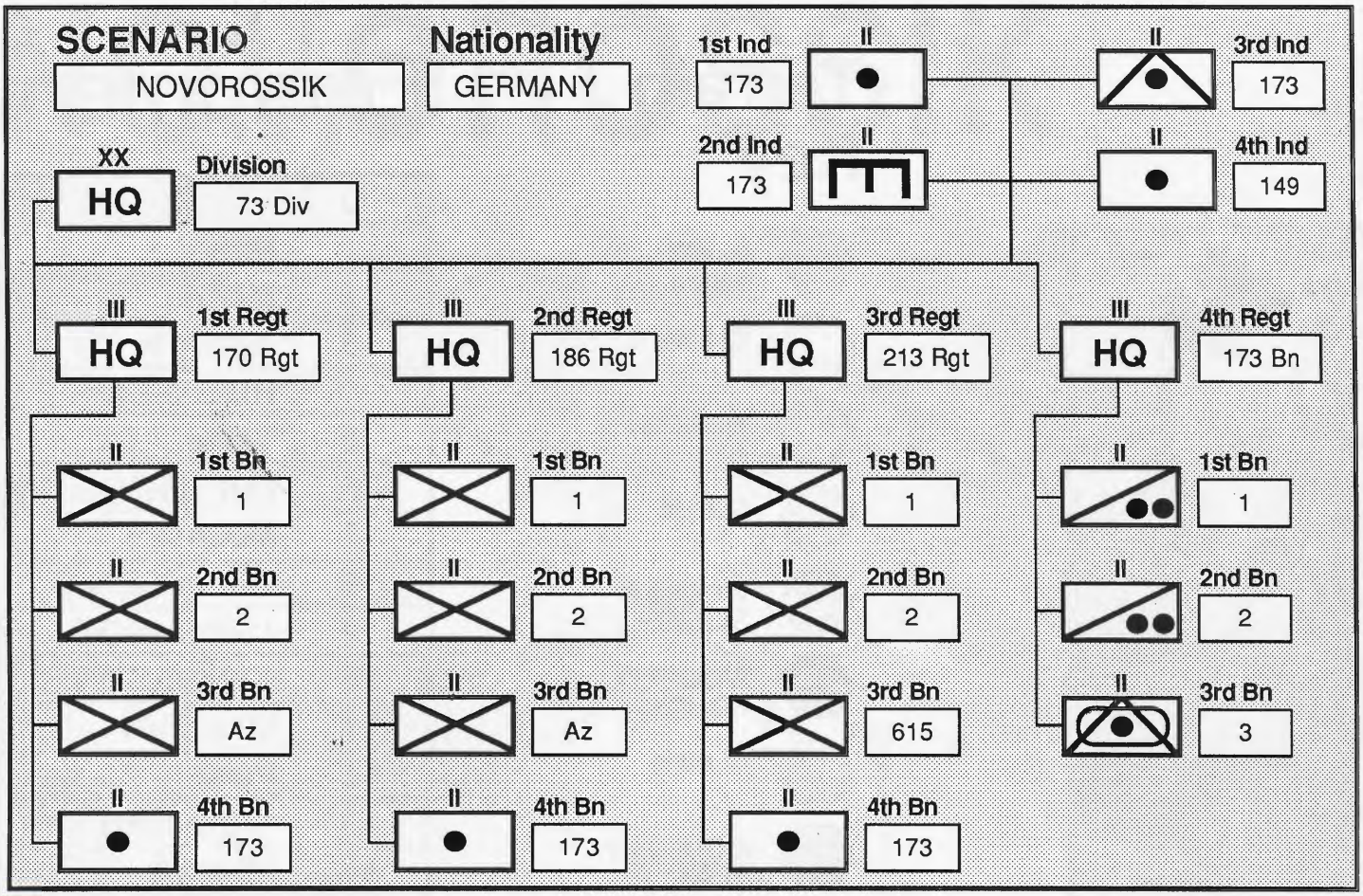
Krasnomedvedovskaya
Verkne-Bakansky
Neber
Vladimirovka
Kirilovka
Borisovka
Mefodyevka
Vasilevka
Cement Works
Novorossik
Glebovka
Fish Cannery
Yuzhnaya Ozereyka
Mud Baths
Alexina
Myshako
BLACK

Terrain Key

- BLACK SEA
- CLEAR
- WOODS
- SLOPE
- WOODED SLOPE
- WOODED ROUGH
- CLIFFS
- MOUNTAIN PEAK
- ROAD
- RIVER
- FORD
- BRIDGE
- TOWN
- CEMENT WORKS
- MUD BATHS
- FISH CANNERY
- FORT
- FRONT LINE

Equipment

0	
1	Rifle
2	Marine
3	Airborne
4	HMG/MOR
5	T-34s
6	Matildas
7	Mountain
8	76mm GUN
9	120mmMOR
10	122mmGUN
11	Mxd GUN
12	Penal
13	152mmGUN
14	Mxd AA
15	M3s
16	Assault
17	Static
18	210mmHOW
19	Cons'pts
20	105mmHOW
21	StugIIIs
22	Marders
23	150mmHOW
24	SD 234s
25	Jaegers
26	75mm HOW
27	Cycle
28	Cossacks
29	Mxd AT
30	Mk IIIs
31	Pz Grens

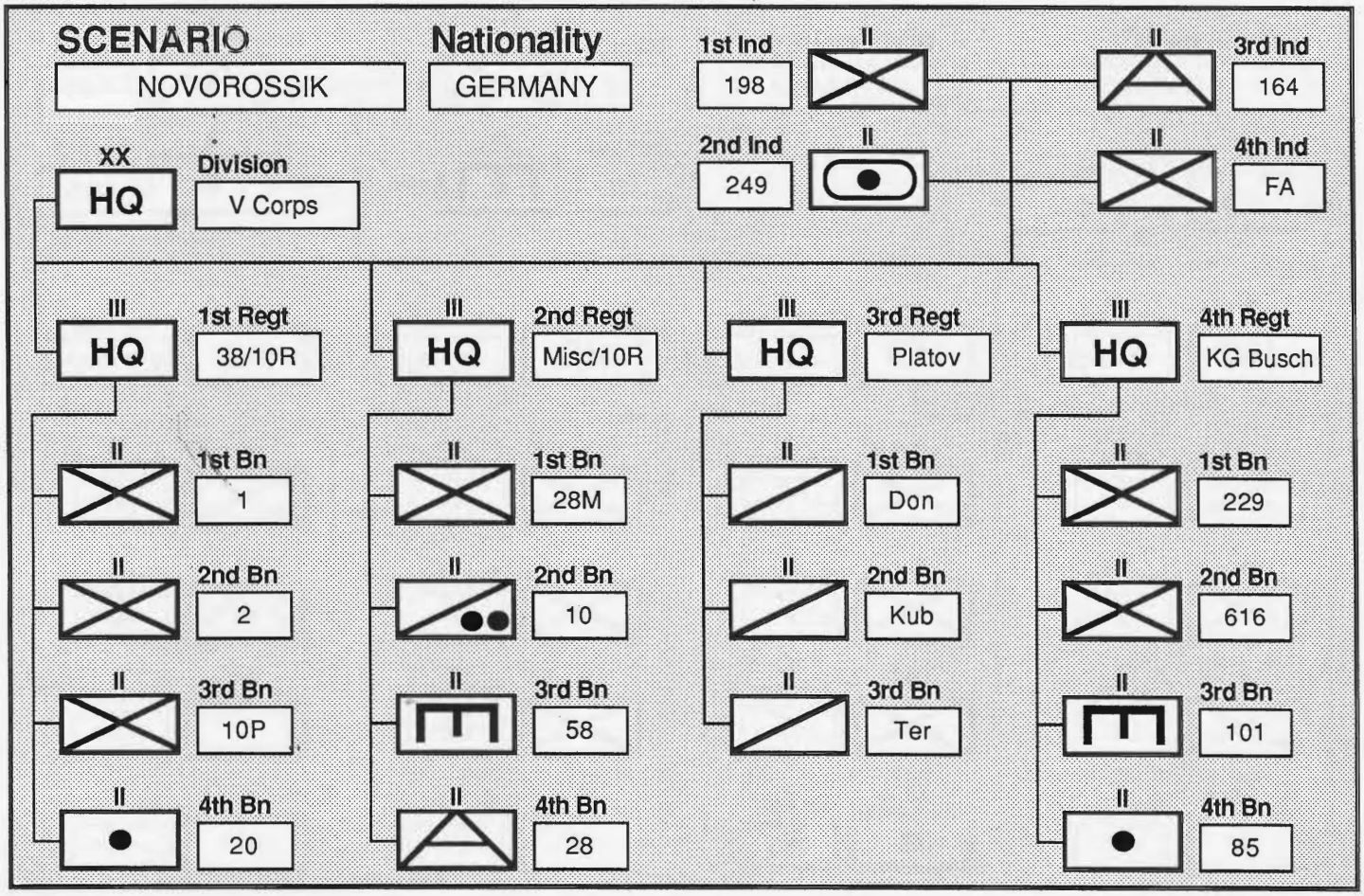


HEADQUARTERS DATA

FORMATION		XX HQ	1/RHQ	2/RHQ	3/RHQ	4/RHQ
HQ I.D.	[8]	73 Div	170 Rgt	186 Rgt	213 Rgt	173 Bn
UNIT TYPE	[8]	INFANTRY	INFANTRY	INFANTRY	INFANTRY	RECON
HQ ADMIN	0-7	6	6	6	6	7
LEADERSHIP	0-7	7	6	7	6	7
HQ SUPPLY	0-7	6	4	5	4	6
ARRIVAL	0-63	0	N/A	N/A	N/A	N/A
LOCATION	(x,y)	22,13	N/A	N/A	N/A	N/A

BATTALION DATA

FORMATION	II/III	1/1	2/1	3/1	4/1	1/2	2/2	3/2	4/2	1/3	2/3	3/3	4/3	1/4	2/4	3/4	4/4	1/-	2/-	3/-	4/-
UNIT I.D.	[3]	1	2	Az	173	1	2	Az	173	1	2	615	173	1	2	3		173	173	173	149
LOCATION	(x,y)	35,7	37,7	36,6	34,5	31,10	32,9	33,8	28,8	28,13	28,12	26,14	25,10	23,11	23,12	22,12		26,8	29,11	26,12	21,12
CLASS	0-13	0	0	0	13	0	0	0	13	0	0	0	13	6	6	10		13	7	9	13
MODE	0-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
EQUIPM'T	0-31	1	1	19	20	1	1	19	20	1	1	1	20	24	24	22		23	16	29	18
MOVEMENT	0-31	7	7	6	6	7	7	6	6	7	7	7	6	16	16	12		5	7	6	4
STRENGTH	0-15	14	11	7	4	15	12	6	4	14	10	12	4	4	4	5		6	8	7	11
RATING	0-15	10	10	6	11	10	10	6	11	10	10	10	11	7	7	10		13	11	9	15
RANGE	0-15	0	0	0	11	0	0	0	11	0	0	0	11	0	0	1		15	0	1	15
ARRIVAL	0-63	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4		0	0	0	0
FATIGUE	0-7	4	4	4	4	4	4	4	4	4	4	4	4	6	6	6		5	4	5	5
EXPERIENCE	0-7	6	6	3	6	7	7	3	7	6	6	5	6	6	6	6		6	7	6	5
ATTACHM'T	0-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	3	3	3

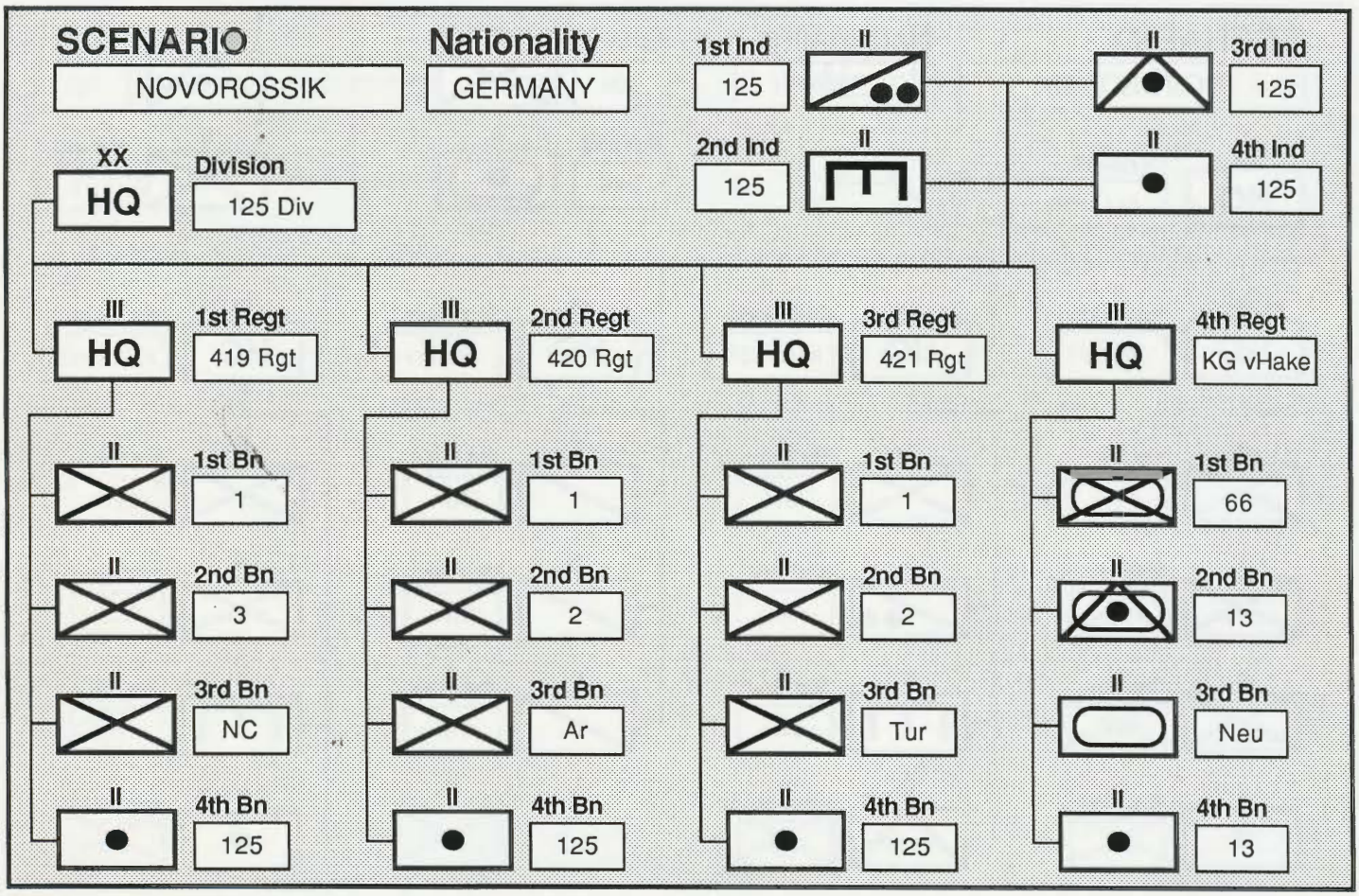


HEADQUARTERS DATA

FORMATION		XX HQ	1/RHQ	2/RHQ	3/RHQ	4/RHQ
HQ I.D.	[8]	V Corps	38/10R	Misc/10R	Platov	KG Busch
UNIT TYPE	[8]	AD HOC	INFANTRY	GARRISON	CAVALRY	INFANTRY
HQ ADMIN	0-7	4	2	2	3	5
LEADERSHIP	0-7	4	3	2	1	7
HQ SUPPLY	0-7	5	6	6	6	7
ARRIVAL	0-63	0	N/A	N/A	N/A	N/A
LOCATION	(x,y)	22,16	N/A	N/A	N/A	N/A

BATTALION DATA

FORMATION	II/III	1/1	2/1	3/1	4/1	1/2	2/2	3/2	4/2	1/3	2/3	3/3	4/3	1/4	2/4	3/4	4/4	1/-	2/-	3/-	4/-
UNIT I.D.	[3]	1	2	10P	20	28M	10	58	28	Don	Kub	Ter		229	616	101	85	198	249	164	FA
LOCATION	(x,y)	9,22	6,23	25,19	9,18	35,0	35,0	1,1	0,2	23,20	22,24	23,22		12,3	12,2	11,1	11,0	23,17	35,0	22,21	1,2
CLASS	0-13	0	0	0	13	0	6	7	8	5	5	5		0	0	7	13	0	12	8	0
MODE	0-3	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0
EQUIPM'T	0-31	1	1	12	26	1	27	16	14	28	28	28		25	1	16	20	1	21	14	1
MOVEMENT	0-31	5	5	4	4	5	10	6	4	9	9	9		8	7	12	6	7	12	10	7
STRENGTH	0-15	7	8	8	3	7	7	9	4	8	10	8		14	15	11	4	13	9	10	13
RATING	0-15	6	6	5	7	5	4	7	6	6	6	6		9	10	11	11	10	10	9	10
RANGE	0-15	0	0	0	9	0	0	0	1	0	0	0		0	0	0	11	0	1	1	0
ARRIVAL	0-63	4	4	4	4	7	9	0	0	4	4	4		0	0	0	0	4	9	4	0
FATIGUE	0-7	7	7	7	7	7	7	7	7	7	7	7		7	7	7	7	7	7	7	7
EXPERIENCE	0-7	3	3	2	3	2	3	4	2	3	3	3		6	6	6	6	5	6	5	4
ATTACHM'T	0-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	4	3	2



HEADQUARTERS DATA

FORMATION		XX HQ	1/RHQ	2/RHQ	3/RHQ	4/RHQ
HQ I.D.	[8]	125 Div	419 Rgt	420 Rgt	421 Rgt	KG vHake
UNIT TYPE	[8]	INFANTRY	INFANTRY	INFANTRY	INFANTRY	PANZER
HQ ADMIN	0-7	5	5	5	5	6
LEADERSHIP	0-7	5	4	5	7	7
HQ SUPPLY	0-7	5	7	7	7	6
ARRIVAL	0-63	8	N/A	N/A	N/A	N/A
LOCATION	(x,y)	15,11	N/A	N/A	N/A	N/A

BATTALION DATA

FORMATION	II/III	1/1	2/1	3/1	4/1	1/2	2/2	3/2	4/2	1/3	2/3	3/3	4/3	1/4	2/4	3/4	4/4	1/-	2/-	3/-	4/-
UNIT I.D.	[3]	1	3	NC	125	1	2	Ar	125	1	2	Tur	125	66	13	Neu	13	125	125	125	125
LOCATION	(x,y)	18,10	17,9	18,8	18,9	17,9	18,9	18,10	18,8	18,9	18,10	17,9	18,8	16,11	16,12	15,12	15,10	19,9	19,8	19,8	19,9
CLASS	0-13	0	0	0	13	0	0	0	13	0	0	0	13	2	10	11	13	6	7	9	13
MODE	0-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EQUIPM'T	0-31	1	1	19	20	1	1	19	20	1	1	19	20	31	22	30	20	24	16	29	23
MOVEMENT	0-31	7	7	6	6	7	7	6	6	7	7	6	6	12	12	12	10	16	7	6	6
STRENGTH	0-15	10	8	7	3	8	8	7	3	8	8	10	3	12	9	9	4	7	6	6	4
RATING	0-15	10	10	6	11	10	10	6	11	10	10	8	11	8	10	9	11	8	11	9	13
RANGE	0-15	0	0	0	11	0	0	0	11	0	0	0	11	0	1	1	11	0	0	1	15
ARRIVAL	0-63	25	25	25	25	23	23	23	23	27	27	27	27	8	8	8	8	25	25	23	23
FATIGUE	0-7	7	7	7	7	7	7	7	7	7	7	7	7	5	5	5	5	7	7	7	7
EXPERIENCE	0-7	5	5	3	5	5	5	2	5	5	5	2	5	7	7	7	7	5	5	5	5
ATTACHM'T	0-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	3	1	1

RUSSIA

Designer's Notes

I write these words one week after Roger and I returned from the Eastern Front. Like Napoleon and Hitler before us, we underestimated the enormity of Russia with the consequence that we spent an extra three months struggling through the endless steppes.

At last it's finished. Roger has fled to New Zealand for a week's R & R. I guess he was homesick. His hometown of Invercargill is the only place in the Southern Hemisphere (except for Antarctica) where it gets as cold as it does in Russia.

I am left with the task of putting down on paper our final thoughts on the game's design. That is, all those things we either forgot or didn't have room to include in the rulebook. So. . .

INTRODUCTION

The campaign game in Russia is divided into operational and strategic components, the former being the weekly events and the latter the monthly cycle. The strategic component (about 12K of code) is called from the disk when needed.

The operational component (which is everything else) has a total of about 120 bytes unallocated. This is not a lot and is the principal villain for the game's tardiness.

More than half of Roger's time in the last three months has been spent reworking and compressing the code to free more memory for the final features, especially displays, of the game.

Towards the end, a typical 4K module would be, say, 12 bytes short of capacity and a small code modification would require an additional 30 bytes. When it takes Roger a full day to scrounge up those extra 20 btyes, then you really know that there's nowhere left to run!

COMPUTER INTELLIGENCE

The code which drives the solitaire was rewritten four times, which brings me to the point I wish to make. Perhaps the most important principal that we have found in computer game design is the vital necessity to integrate the program design with the game design from the very first.

A game design is essentially a number of linked sub-systems operating together to produce a final result. So, of course, is a computer program.

What we believe is that these systems must be the same. A human player cannot be given access to routines which are not available to the computer or which the computer does not have the skills to use.

Consider movement routines. Without naming names, nearly all contempory computer wargames require the human player to move his units hex by hex across the map. There are no restrictions on this movement, other than the traditional board game concepts of terrain costs and zones of control. Within these limits, the units can go anywhere; wherever, in fact, the human general's intuition and observation may lead them. The human general is *encouraged* to exploit the movement routines; by doing so he gets a better result!

A micro-computer cannot hope to compete with this power; at least not directly. At best its movement responses are made to imminent threats or enemy presence within one or two hexes; at worst they follow a more or less pre-programmed course that once derailed becomes embarrassingly obvious.

The solution to the problem lies in structuring the movement routines so that the mechanics which actually drive the units are identical whether human or computer driven.

In addition to producing a more equitable playing environment (and thereby a more enjoyable one), the saving in code is tremendous. Not only have you done away with the need for two separate movement structures but you have also removed the necessity for a string of regulations to prevent the more blatant abuses of human power.

In *Russia*, had we chosen the conventional approach, we estimate an additional 2K to 3K of code would have been required. And the human player would have needed six times as long to play the game.

Boiled down to its essentials, each side in *Russia* has only 10 to 15 units to move; i.e. armees and fronts and only about 10 destinations at any one time that each can legally be moved to.

Teaching the computer to to make more or less sensible decisions in such a small environment as this is demanding, brain-breaking work. As I said at the start, we rewrote the solitaire intelligence four times before we were happy with it. And it's still not perfect!

How much more difficult, then, is it to expect a computer opponent to offer a serious challenge when it must move 50 units to hundreds of potential destinations.

I'd like to give you a brief description of how the computer approaches its decision making, with regard to issuing orders, in *Russia*.

The chain of command structure corresponds to the stages in the computer's decision making; an interesting co-incidence in itself.

The computer first gathers information. Each Korps reports to its Armee its current condition, essentially a number from 0 to 3; i.e. poor, fair, good or excellent. It's the same value the human player receives in his status report. It is calculated by summing Korps supply and admin values, subtracting current losses (KIAs) and dividing the result by 4, rounding up.

Each armee then makes a report to its commanding army group, again a number from 0 to 3. The value is based on the armee's current supply and admin values and an averaged summary of its component Korps' conditions.

Finally, each army group reports to OKH (you guessed it) a value from 0 to 3 which describes its own condition, determined from its supply and admin ratings and an averaged summary of its armee's status.

OKW then issues a directive to each army group - attack, active, defend or retire; 4 choices again. The directive for each army group is determined from an evaluation of army group status, enemy status (i.e. the computer compares its estimate of current enemy KIAs with its own both globally and for each army group) and the previous directive.

Each armee now makes a decision; either to go on main effort, normal or rest. When making this decision, each armee takes into account its army group directive, its own status, weather, nationality, enemy status, suitability of targets and number of supporting armees.

If main effort is chosen, the computer selects a target. Criteria for target selection include distance from HQ location, type of armee (mobile or foot), VP value of target, VP value of any region attached to the target and the presence or otherwise of a supply source. Depending on the army group's directive, the existance of an enemy threat may cancel the main effort.

If normal is chosen, the computer must decide if it needs to shift the location of its HQ. This decision is based on the proximity of enemy units, army group directive and the distribution of suitable locations.

If rest is chosen, the computer will move the HQ to a safe location.

Each Korps is now in a position to select a response for the coming turn.

Korps in contact will consider their armee doctrine, local weather, nationality, Korps type, Korps status, availability of support points, supporting Korps, the terrain and estimated enemy condition before deciding a response. Each contact response is considered to have a different priority and this is used as the basis for the allocation of support points.

It is at armee level that reaction is made to enemy activity. The less aggressive the army group directive, then the more sensitive the armee will be to enemy action. This, in essence, represents initiative.

That's the general outline. What we have done is to reduce the computer's decision making to a number of simple choices, each based on a large amount of quantitative data. Each choice is a separate action; the routines have been structured so that it is not necessary for the computer to make interrelated decisions; i.e. they are interrelated by the nature of the routines themselves.

There are no occasions in the solitaire routines where the computer has to chose between more than four alternatives. Our experience is that this is about the largest number of meaningful distinctions that should be handled in a single routine.

Even more importantly, the results of one decision making routine must be given a quantitative value so that a subsequent routine sees the results of a former as straight data rather than as a continuous series of decisions. Too often computer intelligence routines operate on the basis of 'if this happens then do that then that' etc. The multiplicity of decision making that even the simplest wargame demands is certain to defeat the most complex and sophisticated system chains. It's just too hard to anticipate every contingency, let alone develop the necessary mechanisms to provide the information to base decisions on in the first place.

The operational intelligence module takes up 4K of the *Russia* program. That's all that can be spared without cutting into other systems. The memory constraint within 64K machines is stringent but, of itself, not the real limiting factor in strategy game development. The addition of more memory wont really make any difference to a computer's decision making unless the structures the machine must use to make them are designed to allow the computer to use its strengths (i.e. processing data) rather than forcing it to rely upon its weaknesses.

I guess what we find amazing is that when we look at other game designs, there doesn't seem to be anybody else who is willing to tackle the problem this way; or at least to give it a chance. Now I know that Roger is probably not the world's greatest programmer, and I'm certainly not the greatest game designer, but the direction seems to us to be crystal clear. That's not to say we haven't got heaps more to learn; every game is a revelation and we're constantly finding new and better ways of pushing the code. I should point out here that there is another explanation for our apparent isolation from our colleagues. It may well be that we're both as mad as hatters.

The next feature of solitaire intelligence I'd like to discuss is just how much should the computer know about its human adversary's intentions.

In *Russia*, the computer makes its decisions *before* the human player issues his orders. The temptation to allow the computer direct access to human decision making is an attractive one but ultimately doomed to failure. Once a human player realizes that he can produce a set response from the computer for a given action, then it's only a matter of time before he works out how to use this knowledge to manipulate the machine to its own downfall.

The basic premise when building an intelligence system for a game must be that the system is capable looking after itself.

One of the most beneficial consequences of the first design kit we produced (for *Carriers at War*) was that we had to develop a generic intelligence system. Every game we have done since then also has one.

That's all I have to say about intelligence; for the moment anyway. There are a few other features of *Russia* I'd like to discuss before I run out of room.

THE FRONT LINE

What is the front line in *Russia*? When you switch on the <CONTROL> line in Menu 6 (Map Walk), an Axis or Soviet control symbol replaces all but unit symbols in every hex. If you switch on the <CLEAR MAP> line, you will remove the unit symbols as well, leaving a map which displays only which nationality controls each hex.

The front line is the junction between friendly and enemy control markers. The presence of Korps and Army units indicates major military activity. Where a gap of several hexes appears between friendly formations, you should regard the interval as defended by a thinly stretched divisional screen.

The traditional board game concept of 'Zone of Control' does not exist in *Russia*. What is important is the actual ownership of the hex. Units will move with greater freedom in friendly territory; rail movement is always possible on friendly rail lines (provided the gauge is correct). Supply lines can be traced only through friendly territory.

An examination of any atlas of WW II history (for example *The West Point Atlas of American Wars*, Vol II) will show that the front line on the Eastern Front (or any front for that matter) was not straight but rather a convoluted line representing local offensives and counter-offensives. At any time, an examination of the front line in *Russia* will show the same thing.

What makes this system work is that it is only hex control which matters, not the presence of enemy zones of control.

In every board game on the same subject, it is vital to keep a completely straight line. The moment a unit is enveloped by zones of control, it chance of survival drops by as much as 500%. In consequence, the whole length of the front line must receive a more or less equal distribution of troops. Too often the front line is only as strong as the weakest hex in it. And finally, strenghtening the front line is usually more rewarding than keeping reserves. These board game principles just do not reflect military practice.

In *Russia*, we have tried to produce a more realistic structure. The target selection procedure will usually select the strongest enemy unit as the opponent; only when the enemy has poor admin and leadership values is there much chance that mobile units (panzer/tank/cavalry) will select weak units.

In other words, the more equal the sides are as far as experience, admin and strength are concerned, then the less likely is one of them to have the initiative. This is then reflected in the target selection procedure.

Reserves are vital in *Russia*. Fresh troops with good supply and admin values will always beat tired and hungry men, especially if they are carrying unreplaced losses. One of the greatest pleasures in the game is the timing of a counter-attack to catch the enemy with exhausted and depleted units.

Troops in contact with the enemy find it very difficult to replenish their supply, admin and fatigue levels and they are less likely to receive replacements; even when their armee is on rest. If you want your men to recuperate quickly, you must pull them back out of contact, preferably putting their armee on rest as well.

HIDDEN TRAPS

Doctrine selection is not as straight forward as it may appear. It's not just supply and admin values which must be considered, but division and support point distribution as well.

An armee on rest will have a minimal number of support points; excess will have been returned to the army group HQ. The Korps themselves will be under strength. You should not switch to an immediate main effort if you expect to contact the enemy either this turn or the following one. Support points in transit between one HQ and another take a week before they are available. It's better to warm up by first switching to normal and then to main effort.

A Korps with an assault order can have up to three times as many divisions as a Korps with a hold or deploy order. You will waste much of the assault potential by not allowing your armee enough time to bring itself up to strength.

Similarly, when you are on defense. It's not enough that the enemy cannot attack you this turn. If they can get to you next turn, then it's almost always a mistake to go on rest. You'll probably not have enough support points to sustain a sound defense. There may not even be enough divisions on line to keep the Korps up to strength.

Finally, frequent switching of armee doctrine will reduce your overall support point availability; i.e. the points will be tied up in inter-HQ transfer. The Soviets have to be more careful about this than the Axis since both their ASPs and GSPs come under this routine.

REPLACEMENTS

The rule book is a trifle remiss in its discussion of replacements. In addition to the arrival of replacements through the reinforcement schedule, on board activity can also generate them.

We have taken the view that the best way to reflect the course of events in Russia is to use a combat system which produces a large number of elimination results. This reflects our assessment of the major battles, most of which were over within a week.

Obviously, everybody in the beaten side is not dead; nor are all survivors totally incapable of further resistance. What has happened is that the Korps is no longer capable of effective resistance at the scale used in the game.

Whenever an elimination result is called for, the 'about to be deceased' Korps is checked for supply, admin, leadership and experience as well as KIAs inflicted and a determination is made on the number of survivors. Each division is given a chance, based on the above factors, to return one regiment-sized replacement to the replacement pool.

In addition to rebuilding depleted divisions, the replacement pool can also generate new divisions. Once the number of replacements in any pool exceeds 32, up to one new division per week can be created by the expenditure of 4-6 replacement points. Each type of replacement is considered separately for this routine.

Destroyed Korps are kept in an administrative pool until there are sufficient divisions of the right type in an army group

Continued on p.48

A CONVERSATION WITH CHRIS CRAWFORD

by Gregor Whiley

Chris Crawford is one of the pioneers of computer simulations design. His two latest games, Balance of Power *and* Patton vs. Rommel *have been reviewed in previous issues.*

While all of Chris's games are clearly the result of an original design talent, it was *Balance of Power* that truly showcased his abilities. It was an outstanding concept, which Chris worked into a game, without compromising the original idea.

This article records some of Chris's thoughts (as I imperfectly noted them) about his new game which promises even greater conceptual originality. The game is called *Siboot*, available initially for the Macintosh and published by Mindscape.

Chris considers *Siboot* to be a game designed from theoretical as against topical considerations. Most game designers decide to do a 'space game' or a 'fantasy game'. Chris's game is the result of the theoretical consideration of a solution to game problems.

One of the underlying problems in any game is language. In any game the user 'talks' to the computer to communicate his orders or commands in a very limited language. As an example Chris's *Eastern Front* game had only four verbs, North, East, South and West. All game actions flowed from the use of these four verbs. Actually there could be considered to be only one verb 'GO'. A sentence in *Eastern Front* could only take the form; YOU (this unit) GO (direction). As there were 40 units there were 40 possible subjects for the verb.

Even in *Balance of Power* there are only 62 subjects (the countries), 8 verbs and six modifiers. A *Balance of Power* sentence takes the form SUBJECT (country) VERB (send troops etc) MODIFIER (how much). Even in text adventures which concentrate entirely on language, there are only about 1,700 words recognised in strictly limited forms, by the program's parser. There is obviously no comparison with the complexity and subtlety of real languages.

Chris's solution to this problem is to create an entirely new language. Obviously it will not be as complex as English. However, because the theoretical consideration of the language will form the basis of the game, Chris is trying for a complete implementation of commands in the language.

That is to say, all actions which are part of the game will automatically be expressible in the language. To anyone who has grown frustrated with the synonym guessing that using a traditional adventure game can degenerate into, this is an important point.

Given the success of the Macintosh user interface, it is not surprising that Chris's language will be iconic. Chris' language scheme will mean that the game context will define the transactions possible in the language at any given time. Anything allowable should be expressible. Anything not allowed will not be expressible. This will operate somewhat like the items on a Menu Bar in a Mac program, which are enabled or greyed out at different times in the program depending on whether or not they are applicable in a particular context.

As a side effect, Chris will be able to enforce fairness, or even honesty, something he intends to do in the bargaining transactions in the game. It will not be possible to lie, as the language will regard an untrue statement as inapplicable to the current context. Exactly how traditional adventure game players, (reared on the see it/kill it/steal it principle), will regard this approach remains to be seen.

Naturally, because this new language will not be expressed in English words but in icons, people will have to learn to use the language to play the game. Chris does not feel that this will be a problem.

Chris has taken expert advice, but in any case he feels that he is relying on people's strengths. Humans are very good at inferring a meaning from a particular context and extrapolating from particular or limited information. In any case the computer can be used to provide English transliterations for any player who requires them.

Language is not the only important element for Chris. A catch-cry of his is "people not things". Most games focus on objects (gold, dragons, magic rings etc) and exclude people. In an entire class of games the only interactions are very limited administrative functions (like buying food) or killing people /things.

Not surprisingly Chris feels that there is a lot of scope for focusing more on people and their interactions. Chris would like to create and use artificial personality. Other players in his game (all played by the computer) will , to differing degrees, like or trust you depending on what you have done to them previously. They will also express seven different aspects of personality, all of which affect their actions. Obviously, inveterate backstabbers will be at real disadvantage.

Chris feels that, while all games are obviously about interactions, the best interactions are those that force you to anticipate the actions of the other player. In this game it will be achieved by the use of 'non-commutative combat'. the best example of this is the old paper,scissors, rock game where any one item beats one choice, but is beaten by another.

Continued on p.48

ARMEE DE L'AIR

The Invasion of France

10th - 17th May, 1940

A SCENARIO FOR
EUROPE ABLAZE

By Adrian Long

For the first eight months of the war, the Western Allies had been content to hold the frontier between France and Germany. What little action occurred had been on the ocean or far away. Britain and France had sent comforting words, if little else, to Poland but had otherwise been content to sit on the defensive.

On May 10th, Germany struck westward, and within ten days completely confounded the Allied plans for stopping their enemy on the impenetrable Maginot line. It was bypassed.

At the forefront of Germany's triumph was the Luftwaffe. . .

THE SITUATION

On the April 9th, 1940, the German High Command launched a daring attack upon Norway and Denmark. Spear-heading this assault, and primarily responsible for its success, was the *Luftwaffe* whose transport, ground attack and fighter planes landed paratroopers in vital locations and provided the support to keep them there.

It was an impressive demonstration of the might and potential of resolutely employed air power. It should have been an object lesson to the Allied Command and a clear signal that only an equally determined use of air power would, or could, contest German air superiority.

The signal went unheard. Confusion, timidity and perhaps incompetence were the most likely reasons for the failure of the French and British forces to develop a serious plan to disrupt the proven tactics of the *Luftwaffe*.

On May 10th, the opening day of the attack on France, both the Belgian and Dutch air forces were destroyed on the ground, effectively eliminating them from the fray. French airbases at Metz, Nancy, Dijon and Lyons were attacked, inflicting considerable damage on the aircraft and facilities there.

Notwithstanding the evidence from the Polish and Norwegian campaigns and the conclusions which should have been drawn from these forewarnings, the *Luftwaffe*, amazingly, again achieved total tactical surprise. The initiative, so easily gained, was never relinquished.

For the campaign in the west, all German air operations were conducted by *Luftflotten* 2 and 3. General Kesselring's *Luftflotte* 2 was assigned to the northern sector from Luxembourg to the North Sea and was to co-operate with Army Group B. *Luftflotte* 3, commanded by General Sperrle, controlled the southern sector to the Swiss border and was to support the operations of Army Groups A and C.

The transport for the paratroop and airborne infantry formations was under the separate command of *Fliegerfuehrer zur besonderen Verwendung* (Air Command for

ARMEE DE L'AIR - Plane Types

PLANE NUMBER	1-37	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PLANE TYPE	[11]	Spitfire 1A	Hurricane	Gladiator	Blenheim	Battle	MS 406	De 520	LeO 451	MB 151	MB 152	H.75 Hawk	Po 631	Po 633	MB 131	Bloch 210	Po 637
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CREW	0-7	1	1	1	3	3	1	1	5	1	1	1	2	2	4	5	2
FUEL	1-255	27	30	28	61	57	36	30	150	25	29	23	58	58	78	73	58
PAYLOAD	0-63	0	0	0	4	4	2	0	23	0	0	0	2	3	8	8	4
SERVICE CEIL.	11-41	32	34	33	27	25	29	33	30	24	25	25	29	29	35	33	30
MAX. SPEED	0-41	18	15	13	14	13	8	17	12	12	14	12	15	15	15	15	15
OPT. ALTITUDE	0-31	15	18	15	15	15	5	15	17	14	14	15	13	13	15	15	13
CRUIS. SPEED	0-31	11	10	11	11	10	7	12	10	10	10	10	12	12	9	11	12
CLIMB RATE	0-15	13	14	11	7	6	10	14	6	10	12	11	7	7	5	5	8
FIREPOWER	0-7	4	4	3	3	1	4	5	5	2	3	3	4	5	5	5	5
MANOEUVER.	0-7	6	5	7	3	3	5	5	3	4	4	4	3	3	3	3	4
VULNERABILITY	0-7	4	3	2	3	3	3	5	3	3	3	3	3	4	3	4	4
RADAR	0-7	6	1	6	0	0	3	3	0	0	0	0	0	0	0	0	0
REPL. RATE	0-7	5	2	0	1	1	4	2	1	3	3	4	3	3	4	4	3
ECM	0-7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NIGHT	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

PLANE NUMBER	1-37	17	18	19	20	21	22	23	24	25
PLANE TYPE	[11]	Am 143	Po 630	Bf 109E	Ju 88A	Ju 87B	Do 17Z	He 123	He 111H	Bf 110C
ROLE	0-3	2	1	0	2	2	2	2	2	1
CREW	0-7	3	2	1	4	2	4	1	5	3
FUEL	1-255	62	48	18	85	27	69	29	83	48
PAYLOAD	0-63	5	2	0	27	4	8	4	24	4
SERVICE CEIL.	11-41	25	25	34	30	27	23	30	26	33
MAX. SPEED	0-41	13	14	18	14	12	13	11	13	17
OPT. ALTITUDE	0-31	14	13	12	18	14	13	4	16	20
CRUIS. SPEED	0-31	9	10	14	11	11	11	10	11	11
CLIMB RATE	0-15	4	7	15	4	8	3	13	2	10
FIREPOWER	0-7	3	3	5	2	1	2	2	3	5
MANOEUVER.	0-7	3	3	5	3	4	3	6	2	3
VULNERABILITY	0-7	3	3	4	4	2	3	3	3	3
RADAR	0-7	0	0	3	0	0	0	0	0	3
REPL. RATE	0-7	2	1	4	4	2	2	1	5	2
ECM	0-7	0	0	0	0	0	0	0	0	0
ALLIED	Y/N	Y	Y	N	N	N	N	N	N	N
NIGHT	Y/N	N	N	N	N	N	N	N	N	N

A. DE L'AIR - Doctrine

NATIONALITY		AXIS	ALLIES
MISSIONS	0-15	4	1
POPULATION	0-7	4	0
INDUSTRY	0-7	2	5
COMM'CATIONS	0-7	7	6
PORT FACILITIES	0-7	5	3
AIRFIELDS	0-7	5	7
RADAR	0-7	0	0
GROUND UNITS	0-7	7	7
SUPREME COM.	0-7	5	3
C. - IN - C.	0-7	7	4
GROUND ECM	0-7	0	0
ORD. EFFECT	0-3	2	1
AA FIRE CONTROL	0-3	1	0

ARMEE DE L'AIR - Centres

CENTRE NUMBER	1-63	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CENTRE NAME	[11]	Aachen	Trier	Saarbrucken	Dusseldorf	Cologne	Emden	Essen	Koblenz	Freiburg	Dortmund	Mainz	Bremhaven	Frankfurt	Darmstadt	Mannheim	Karlsruhe
LOCATION	(x,y)	21,16	22,20	23,21	23,15	23,16	24,8	24,14	24,18	24,26	25,14	25,19	26,7	26,19	26,20	26,21	26,23
POPULATION	0-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDUSTRY	0-3	0	1	1	2	1	1	3	1	0	3	2	1	3	2	2	1
PORT FACILITIES	0-3	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0
COMM'CATIONS	0-3	2	2	3	2	3	1	2	1	1	1	2	0	2	1	2	3
ALLIED	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

CENTRE NUMBER	1-63	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
CENTRE NAME	[11]	Bremen	Stuttgart	Hamburg	Hannover	Kassel	Schweinfurt	Augsberg	Magdeburg	Leipzig	Regensburg	Munich	Berlin	St Nazaire	St Malo	La Rochelle	Bordeaux
LOCATION	(x,y)	27,8	28,23	29,7	29,10	29,15	30,20	31,25	33,12	34,15	34,23	34,26	37,10	1,25	2,23	3,29	3,33
POPULATION	0-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDUSTRY	0-3	1	2	3	2	2	3	2	1	1	3	2	3	0	0	0	1
PORT FACILITIES	0-3	0	0	3	0	0	0	0	0	0	0	0	0	2	1	2	3
COMM'CATIONS	0-3	0	1	2	0	1	0	1	1	1	1	2	3	0	0	1	2
ALLIED	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y

CENTRE NUMBER	1-63	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
CENTRE NAME	[11]	Cherbourg	Le Harve	Dieppe	Orleans	Calais	Boulogne	Amiens	Paris	Lille	Arras	Troyes	Reims	Lyons	Sedan	Dijon	Metz
LOCATION	(x,y)	4,19	9,20	10,19	11,23	12,16	12,17	12,19	12,22	14,17	14,18	15,23	16,21	17,30	18,21	18,26	20,21
POPULATION	0-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDUSTRY	0-3	0	0	0	2	0	0	1	3	3	1	2	1	3	0	1	1
PORT FACILITIES	0-3	1	2	2	0	2	2	0	0	0	0	0	0	0	0	0	0
COMM'CATIONS	0-3	2	1	1	1	2	2	2	3	2	2	2	2	3	3	2	3
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

CENTRE NUMBER	1-63	49	50	51	52	53	54	55	56	57
CENTRE NAME	[11]	Nancy	Mulhouse	Strasbourg	Bruges	Brussells	Eban Emael	Rotterdam	Amsterdam	Eindhoven
LOCATION	(x,y)	20,23	23,26	24,24	15,15	17,16	19,16	18,12	19,11	19,14
POPULATION	0-3	0	0	0	0	3	0	3	3	0
INDUSTRY	0-3	0	0	1	0	1	0	2	1	0
PORT FACILITIES	0-3	0	0	0	1	0	0	2	3	0
COMM'CATIONS	0-3	2	2	3	1	2	3	2	2	2
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y

Special Purposes). Some 500 transport aircraft were assembled, including about 50 gliders for use in Holland.

A maximum of 3,500 combat aircraft were employed at one point in the campaign, almost 80% of the total front-line strength. The details were as follows; medium bombers (1,300), dive bombers (380), single engine fighters (860), twin engine fighters (350) and some 600 reconnaissance aircraft.

Of the total Allied air strength available, over 80% were provided by the *Armee de l'Air*, the air force of the French Republic. The air defense of France had been divided into a number of air zones. By May 10th, most combat aircraft had been assigned to the north and east air zones.

The British contribution to the joint air forces were mostly Hurricanes and Fairey Battles and these were organized as an

Continued on p.39

ARMEE DE L'AIR - Map

National Border
Front Line

SCENARIO NINE
'ARMEE de l'AIR'

Allied Commands	Axis Commands
# 1 RAF	# 1 Kesselring
# 2 Armee de l'Air	# 2 Sperrle

ARMEE DE L'AIR - Squadrons

SQN NUMBER	1-255	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SQN I.D.	[6]	1/3EC	2/3EC	3/3EC	1/7EC	2/7EC	1/2EC	2/2EC	3/2EC	1/6EC	2/6EC	1/301	2/301	3/301	4/301	5/301	4/3EC	3/7EC	1/5EC
PLANE TYPE	1-37	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	18	18	18
OFFICIAL EST.	1-31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	16	16	16
INITIAL EST.	1-31	31	31	12	31	28	31	31	18	31	23	31	31	31	31	6	9	9	8
VETERAN	0-31	3	3	2	0	0	2	2	0	1	2	2	2	0	2	0	0	0	0
EXPERIENCED	0-31	15	15	10	9	9	19	19	14	9	15	16	16	18	15	3	4	4	4
FATIGUE	0-7	7	7	0	7	7	7	7	7	7	7	7	7	7	7	0	7	7	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
SQN I.D.	[6]	1/2E	1/6E	1/1E	1/4EC	1/3E	1/7E	CEIT	1/4E	11/13	1/5E	2/2E	3/2E	4/2E	5/2E	2/6E	2/1E	1/13	1/8E
PLANE TYPE	1-37	18	18	18	18	12	12	12	12	12	12	12	12	12	12	12	12	12	12
OFFICIAL EST.	1-31	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
INITIAL EST.	1-31	12	8	8	1	6	6	2	8	20	6	20	20	20	16	6	4	18	13
VETERAN	0-31	0	1	1	0	0	0	0	0	0	1	2	1	2	2	0	0	2	2
EXPERIENCED	0-31	6	4	4	1	5	4	2	4	13	4	16	17	16	12	3	3	7	6
FATIGUE	0-7	7	7	7	0	0	0	0	7	7	0	7	7	7	7	0	0	7	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
SQN I.D.	[6]	2/8E	6/301	33 REC	52 REC	1/1EC	7/301	8/301	14 REC	2/4E	1/22E	2/22E	2/4EC	3/4EC	2/5EC	3/5EC	9/301	10/301	11/301
PLANE TYPE	1-37	12	12	16	16	9	10	10	14	14	14	14	11	11	11	11	11	11	13
OFFICIAL EST.	1-31	20	20	31	31	31	31	31	20	20	20	20	31	31	31	31	31	31	31
INITIAL EST.	1-31	13	5	26	27	24	25	20	18	1	20	12	31	23	31	23	31	2	18
VETERAN	0-31	2	0	3	2	3	4	3	3	0	3	2	4	4	2	2	1	0	0
EXPERIENCED	0-31	6	2	20	21	20	20	16	10	1	17	6	21	17	12	13	15	2	9
FATIGUE	0-7	7	0	7	7	7	7	7	7	0	7	7	7	7	7	7	7	0	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	N	N	N	Y	Y	Y	Y	N	N	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
SQN I.D.	[6]	1/31	2/31	1/3	2/3	1/34	1/38	1/2REC	2/2REC	1/3REC	2/3REC	3/3REC	4/3REC	5/3REC	1	73	85	87	501
PLANE TYPE	1-37	8	8	7	7	17	17	15	15	15	15	15	15	15	2	2	2	2	2
OFFICIAL EST.	1-31	31	31	31	31	31	31	31	31	31	31	31	31	31	16	16	16	16	16
INITIAL EST.	1-31	30	30	18	18	31	26	18	18	31	31	31	31	8	16	16	16	16	16
VETERAN	0-31	0	0	1	1	2	2	3	3	0	2	1	4	0	0	1	2	2	4
EXPERIENCED	0-31	12	8	6	6	15	10	14	14	19	21	29	25	5	10	9	9	10	10
FATIGUE	0-7	7	7	7	7	7	7	7	7	7	7	7	7	0	7	7	7	7	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
SQN I.D.	[6]	12	14	18	57	88	98	103	105	114	139	142	150	218	226	615	213	242	245
PLANE TYPE	1-37	5	4	4	4	5	5	5	5	4	4	5	5	5	5	2	2	2	2
OFFICIAL EST.	1-31	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
INITIAL EST.	1-31	16	16	12	9	16	16	16	16	16	16	15	16	16	16	16	16	16	16
VETERAN	0-31	1	2	2	0	2	3	3	2	2	4	2	1	2	2	2	2	2	2
EXPERIENCED	0-31	15	14	10	9	14	13	13	14	12	10	10	14	14	12	14	12	9	10
FATIGUE	0-7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	2	2	2
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	Y	N	N	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
SQN I.D.	[6]	253	504	601	604	605	607	609	610	616	1/KG53	1/KG26	2/KG26	3/KG26	1/KG27	2/KG27	3/KG27	2K/LG1	3K/LG1
PLANE TYPE	1-37	2	2	2	3	3	3	1	1	1	24	24	24	24	24	24	24	24	24
OFFICIAL EST.	1-31	16	16	16	16	16	16	16	16	16	31	31	31	31	31	31	31	31	31
INITIAL EST.	1-31	16	16	16	10	10	8	16	16	16	28	28	28	28	26	26	27	28	28
VETERAN	0-31	1	0	3	2	1	1	4	5	3	14	12	13	11	9	6	6	10	8
EXPERIENCED	0-31	15	16	13	7	9	4	12	11	13	16	16	18	20	20	17	19	19	19
FATIGUE	0-7	2	2	2	2	2	2	7	7	7	7	7	7	7	7	7	7	7	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
SQN I.D.	[6]	1/KG4	2/KG4	3/KG4	KGr100	2/KG53	3/KG53	1/KG55	2/KG55	1/SG2	2/SG2	3/SG2	1/SG1	2/SG1	3/SG1	1/SG77	2/SG77	3/SG77	4S/186
PLANE TYPE	1-37	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21
OFFICIAL EST.	1-31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
INITIAL EST.	1-31	26	24	29	31	28	26	28	21	24	23	23	24	23	23	23	23	23	26
VETERAN	0-31	5	5	8	10	5	8	12	6	8	6	6	8	8	7	6	4	4	13
EXPERIENCED	0-31	19	14	14	21	21	22	18	14	14	14	13	14	14	14	15	10	8	13
FATIGUE	0-7	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

ARMEE DE L'AIR - Squadrons (Cont.)

SQN NUMBER	1-255	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
SQN I.D.	[6]	4S/LG1	1/SG76	2/SG76	3/SG76	1F/121	2F/121	3F/121	4F/121	1F/120	1/KG2	2/KG2	3/KG2	1/KG3	2/KG3	3/KG3	3F/123	2/KG77	3/KG77
PLANE TYPE	1-37	21	21	21	21	22	22	22	22	22	22	22	22	22	22	22	22	22	22
OFFICIAL EST.	1-31	31	31	31	31	12	12	12	12	12	31	31	31	31	31	31	12	31	31
INITIAL EST.	1-31	26	21	21	21	12	11	10	12	12	20	20	20	18	19	19	12	20	20
VETERAN	0-31	13	6	8	8	4	4	3	4	4	5	5	6	6	6	8	3	6	6
EXPERIENCED	0-31	13	13	13	12	6	7	7	7	7	14	12	12	10	12	12	10	16	14
FATIGUE	0-7	7	5	5	5	7	7	7	7	7	5	5	5	5	5	5	7	5	5
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162
SQN I.D.	[6]	2F/122	1/KG77	1F/124	1/KG76	2/KG76	3/KG76	1K/LG1	1/KG30	2/KG30	3/KG30	1F/123	3F/122	2F/123	1/KG54	2/KG54	1/KG51	1/JG1	2/JG1
PLANE TYPE	1-37	22	22	22	22	22	22	20	20	20	20	20	20	20	20	20	20	19	19
OFFICIAL EST.	1-31	12	31	12	31	31	31	31	31	31	31	12	12	12	31	31	31	31	31
INITIAL EST.	1-31	12	20	11	16	16	16	29	20	20	20	12	12	11	22	22	25	25	24
VETERAN	0-31	4	6	3	7	5	6	6	6	6	4	4	6	4	8	8	10	4	4
EXPERIENCED	0-31	8	18	6	8	9	9	21	14	14	12	6	6	8	13	13	14	13	13
FATIGUE	0-7	7	5	7	3	3	3	7	5	5	5	7	7	7	7	7	5	7	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	Y	N	Y	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
SQN I.D.	[6]	3/JG1	1/JG4	2/JG4	3/JG4	1/KG1	2/KG1	3/KG1	1/JG27	2/JG27	3/JG27	1/JG3	2/JG3	3/JG3	1/ZG26	2/ZG26	3/ZG26	3/JG2	2/JG2
PLANE TYPE	1-37	19	19	19	19	24	24	24	19	19	19	19	19	19	25	25	25	19	19
OFFICIAL EST.	1-31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
INITIAL EST.	1-31	27	19	18	27	24	24	28	28	27	24	28	28	24	23	22	24	20	25
VETERAN	0-31	6	3	3	5	6	6	10	3	6	5	5	7	5	4	3	5	4	5
EXPERIENCED	0-31	20	17	19	20	16	11	18	16	18	19	16	16	16	15	20	20	18	18
FATIGUE	0-7	7	5	5	5	7	7	7	7	7	7	7	7	7	7	7	7	7	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198
SQN I.D.	[6]	1/JG2	1/JG20	1/JG77	2/JG77	3/JG77	1/JG76	2/JG76	1/JG53	2/JG53	3/JG53	1J/LG2	2J/LG2	1/JG54	2/JG54	3/JG54	4/JG54	a/Lehr	b/Lehr
PLANE TYPE	1-37	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
OFFICIAL EST.	1-31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	12	12
INITIAL EST.	1-31	27	27	25	26	25	28	28	25	25	25	24	26	27	31	31	31	12	12
VETERAN	0-31	7	5	5	6	6	8	9	9	4	4	12	12	7	2	5	7	2	2
EXPERIENCED	0-31	12	8	6	19	17	17	17	17	18	18	16	17	21	25	25	22	1	2
FATIGUE	0-7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RECON OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NAVAL OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

SQN NUMBER	1-255	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216
SQN I.D.	[6]	c/Lehr	d/Lehr	e/Lehr	5J/186	6J/186	4J/186	3J/186	2J/186	1/ZG2	2/ZG2	3/ZG2	1Z/LG1	1/ZG1	2/ZG1	2Z/LG1	1S/LG2	2S/LG2	
PLANE TYPE	1-37	19	19	19	19	19	19	19	19	25	25	25	25	25	25	25	23	23	
OFFICIAL EST.	1-31	12	12	12	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
INITIAL EST.	1-31	12	12	12	29	29	29	20	23	28	28	24	28	27	26	18	21	23	
VETERAN	0-31	2	2	2	10	8	6	4	9	10	8	4	7	7	7	4	6	7	
EXPERIENCED	0-31	0	0	1	19	19	19	15	17	16	16	16	17	19	15	10	14	14	
FATIGUE	0-7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
RECON OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
NAVAL OPS	Y/N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PATHFINDER	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

ARMEE DE L'AIR - Ground Units

UNIT NUMBER	1-63	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
I.D. CODE	[1]	H	H	H	H	B	B	B	B	B	B	E	E	F	F	F	F	F	F	F	F	F	F	F	F
LOCATION	(x,y)	22,11	22,12	20,13	20,14	19,15	19,16	20,17	20,18	19,18	19,19	15,17	15,18	16,19	17,19	19,21	20,21	21,21	22,22	23,22	24,23	25,22	24,24	23,24	23,25
STRENGTH	0-7	1	2	2	1	3	5	3	3	2	2	4	4	3	3	5	5	4	3	2	3	2	3	1	1
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

UNIT NUMBER	1-63	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
I.D. CODE	[1]	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
LOCATION	(x,y)	23,26	23,27	24,8	24,10	23,11	23,12	21,13	21,15	21,16	21,17	21,18	22,19	22,20	22,21	23,21	24,22	25,21	26,22	26,23	25,23	25,24	24,25	24,26	24,27
STRENGTH	0-7	2	1	3	3	4	3	4	4	4	5	5	5	5	5	4	3	3	3	3	2	2	2	2	2
ALLIED	Y/N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

A. DE L'AIR - Axis Commands

	NAME	CURSOR	THRSH.	PRIOR.
C. - IN - C.	Goering	3	N.A.	N.A.
COMMANDER #1	Kesselring	3	450	6
COMMANDER #2	Sperrle	3	500	6
COMMANDER #3				
COMMANDER #4				
COMMANDER #5				

A. DE L'AIR - Allied Commands

	NAME	CURSOR	THRSH.	PRIOR.
C. - IN - C.	Vuillemin	1	N.A.	N.A.
COMMANDER #1	RAF	1	20	4
COMMANDER #2	A. de L'Air	1	40	3
COMMANDER #3				
COMMANDER #4				
COMMANDER #5				

ARMEE DE L'AIR - Airfields

AIRFIELD NUM.	1-127	1	2	3	4	5	6	7	8	9	10	11	12	13	14
AIRFIELD NAME	[11]	Dijon 1	Dijon 2	Dijon 3	Chartres 1	Chartres 2	Chartres 3	Chateaudun 1	Chateaudun 2	Chateaudun 3	Reims 1	Reims 2	Reims 3	Etampes 1	Etampes 2
LOCATION	(x,y)	18,26	18,26	18,26	11,22	11,22	11,22	10,23	10,23	10,23	16,21	16,21	16,21	12,23	12,23
ASSIGNED SQNS	[4]	4,2 3,4	5,16 17,23	24	10,19 20,29	6,7 8,9	30,31 32,33	11,12 13,14	15,38 42,43	52,53 54,89	18,22 26,27	28,45 48,49	50,51 86	21,34 35,41	57,58
THEATRE	0-3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
DAM. STATUS	0-15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
DAM. CONTROL	0-3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
SEALED	Y/N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

AIRFIELD NUM.	1-127	15	16	17	18	19	20	21	22	23	24	25	26	27	28
AIRFIELD NAME	[11]	Nancy	Marginane	Mourmelon	Orleans	Connantre	Lyon	Paris	Tours 1	Tours 2	Echemines	Merville	Meharicourt	Crecy	Nantes
LOCATION	(x,y)	20,23	17,20	17,21	11,23	16,23	17,30	12,22	8,24	8,24	16,30	14,22	18,23	12,17	3,25
ASSIGNED SQNS	[4]	25,39 40	36,37	44,77	46,47	55,56	59,60	61,62 91	63,64 65,66	67	73	88,93	75	71,76 87,96	68,78
THEATRE	0-3	2	2	2	2	2	2	2	2	2	1	1	1	1	1
DAM. STATUS	0-15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
DAM. CONTROL	0-3	2	2	2	2	2	2	2	2	2	1	2	1	1	1
SEALED	Y/N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

AIRFIELD NUM.	1-127	29	30	31	32	33	34	35	36	37	38	39	40	41	42
AIRFIELD NAME	[11]	Bethonville	Villeneuve	Conde Vraux	Pivot	Ecury Coole	Auberive	Rouvres	Lille	Alconbury	Hawkinge	Northolt	Biggin Hill	Manston	Kiel
LOCATION	(x,y)	17,25	13,25	14,21	17,35	19,25	16,31	18,25	14,17	9,10	6,15	8,12	8,13	6,15	29,3
ASSIGNED SQNS	[4]	72,79	80	81,83	82	84	85	69	70,92	74	90,95	97	98,99	94	158,159 161,162
THEATRE	0-3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DAM. STATUS	0-15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
DAM. CONTROL	0-3	1	1	1	1	1	1	2	2	3	2	2	2	2	2
SEALED	Y/N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N

AIRFIELD NUM.	1-127	43	44	45	46	47	48	49	50	51	52	53	54	55	56
AIRFIELD NAME	[11]	Nordholz	Stade	Jever	Oldenberg	Luneburg	Wunstorf	Rheine	Gardelegen	Doberitz	Munster	Hamburg	Bonn	Erfurt	Weisbaden
LOCATION	(x,y)	26,7	28,7	24,8	25,8	30,8	29,9	26,11	33,11	37,9	25,13	29,7	23,16	30,16	25,18
ASSIGNED SQNS	[4]	117,118 119,202	142,145 164,176	120,121 165,214	126,127 166,170	100,101 102,182	131,132 133,185	136,137 138,172	151,152 153,154	109,110 111	150,173 174,175	149,188 189,190	122,123 186,187	104,105 106,148	171,177 178,179
THEATRE	0-3	1	1	1	1	1	1	1	1	1	1	1	2	2	2
DAM. STATUS	0-15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
DAM. CONTROL	0-3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
SEALED	Y/N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
ALLIED	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

AIRFIELD NUM.	1-127	57	58	59	60	61	62	63	64	65	66	67	68	69	70
AIRFIELD NAME	[11]	Kitzingen	Schliesheim	Neubiberg	Emden	Essen	Cologne	Prenzlau	Stuttgart	Heidelberg	Speyer	Ansbach	Bingan	Frankfurt	Biberach
LOCATION	(x,y)	31,20	35,25	34,26	24,8	24,14	23,16	39,7	28,23	27,20	26,20	31,20	26,21	26,19	26,23
ASSIGNED SQNS	[4]	107,108 147	155,156 157	139,140 141	207,208 209	193,194 195,196	210,211 212	103,160	112,144 213	197,198 199	204,205 206	113,114 180	115,116 215	134,135 200,201	128,129 130
THEATRE	0-3	2	2	2	1	1	2	1	2	2	2	2	2	2	2
DAM. STATUS	0-15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
DAM. CONTROL	0-3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
SEALED	Y/N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N
ALLIED	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

AIRFIELD NUM.	1-127	71	72	73	74
AIRFIELD NAME	[11]	Munich	Offenburg	Darmstadt	Neumunster
LOCATION	(x,y)	34,26	25,24	26,20	28,4
ASSIGNED SQNS	[4]	181,183 184	124,125 203	143,146 191,192	163,167 168,169
THEATRE	0-3	2	2	2	1
DAM. STATUS	0-15	15	15	15	15
DAM. CONTROL	0-3	2	2	2	2
SEALED	Y/N	N	N	N	N
ALLIED	Y/N	N	N	N	N

A. - Time

DATE	1-31	10
MONTH	1-12	5
YEAR	0-63	40
LENGTH	1-31	8
DAWN	3-10	5
DUSK	15-22	20
MOON	0-27	2
FORECAST	0-3	1

A. - Weather

C = 4 W = 2	C = 5 W = 3	C = 5 W = 2
C = 6 W = 3	C = 4 W = 3	C = 3 W = 4
C = 3 W = 4	C = 3 W = 5	C = 3 W = 6
C = 4 W = 5	C = 5 W = 5	C = 4 W = 6

ARMEE DE L'AIR - Flak Units

UNIT NUMBER	1-63	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
I.D. CODE	[1]	H	H	H	B	B	B	F	F	F	F	F	F	F	F	F	F	E	E	E	G	G	G	G	G
LOCATION	(x,y)	18,12	19,11	19,14	15,15	17,16	19,16	11,22	12,16	14,17	17,21	17,30	18,26	20,21	20,23	24,24	23,26	6,15	8,13	9,10	23,16	24,8	24,14	24,18	24,26
STRENGTH	0-255	12	12	8	12	12	4	14	18	18	14	18	18	12	12	8	8	30	30	30	16	8	12	12	12
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N

UNIT NUMBER	1-63	25	26	27	28	29	30	31	32	33	34	35	36	37
I.D. CODE	[1]	G	G	G	G	G	G	G	G	G	G	G	G	G
LOCATION	(x,y)	26,7	26,11	26,19	26,20	26,23	18,23	29,7	29,10	29,15	30,20	33,12	34,26	37,10
STRENGTH	0-255	8	8	16	16	16	12	16	16	20	12	12	16	24
ALLIED	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N

Continued from p.34

expeditionary air force, nominally sub-ordinated to the northern air zone.

The combined Allied air strength (at least on paper) was greater than its adversary. Several years of consistant bureaucratic mismanagement within the *Armee de l'Air* was responsible for its abysmally low level of readiness for war. Even as late as May 10th, nine months after war had been declared, many French squadrons were short of operational aircraft. The newer types, such as Dewoitines' sharp, single engined fighter, had been subject to continual delivery delays. In consequence, the bulk of French fighter duties were assumed by the Morane Saulnier 406, an aging aircraft no match for the speedy Bf 109s.

Britain chose to withold its most modern fighter type, the Spitfire, from the campaign. Hindsight, perhaps, has justified this decision but it is interesting to speculate on the effect this plane may have had. The greater combat experience of the *Luftwaffe's* fighter pilots may well have been more than the Allies could manage but a better air frame must surely have reduced the margin.

The German plan for the employment of its air forces involved three phases. The first was to be a concentrated attack upon Allied airfields, the second the transport of airborne forces and the third the direct support of German Army operations in Holland, Belgium and the projected armour thrust through France to the English Channel.

The airborne operations for the capture of Holland began on the morning of the 10th, immediately after the destruction of the Dutch Air Force. Airborne infantry were landed at Rotterdam, both by glider and floatplane, and secured the vital Moerdijk Bridge. Further south, the principal Belgian fortress at Eban Emael was captured by a tiny detachment of just 90 paratroopers.

In the ensuing confusion and disorder, the German paratroopers were able to keep open the main bridges and roads for the speedy deployment of the ground forces. After 5 days of fighting, the Dutch Army surrendered.

In the meantime, German armoured columns had pushed into the Ardennes, a heavily forrested region overlapping the junction of the French, Belgian and German borders. Continuous reconnaissance, both long range and tactical, provided an accurate picture of Allied troop dispositions and movements.

On May 13th, the armoured spearhead struck westward across the Meuse from Sedan; the information directing this drive had come primarily from *Luftwaffe* reconnaissance reports.

Strikes against Allied railways, marshalling yards, bridges and roads as well as troop concentrations, airfields and aircraft facilities were flown by day and night.

Fliegerkorps VIII, with its strong force of dive bombers, was the cutting edge of the German advance. No sooner would an Alied strongpoint form than the dive bombers would be called in to smash it.

The inexperience which had to some extent marred the successful co-operation of air and ground forces in Poland had disappearred. The *Blitzkrieg* doctrine had become a reality.

By May 24th, the panzers had reached Calais, separating the English army from the French and forcing the British to evacuate their last position at Dunkirk.

For the first time, the British committed the Spitfire to battle. For the first time, the *Luftwaffe* had to contend with effective fighter opposition. German aircraft losses were heavy over Dunkirk and in the end the *Luftwaffe* proved incapable of preventing the rescue of the bulk of the British Expeditionary Force.

There is no disputing the completeness of the German victory in France in the spring of 1940. For the *Luftwaffe*, however, many of the conclusions drawn were to cost them dearly in the following years.

For the Royal Air Force, the drubbing served as a stimulus for a complete reorganization of their air doctrine. The first fruits would be a vital victory in the imminent Battle of Britain.

For the *Armee de l'Air*, the war was over.

THE SCENARIO

There are a couple of interesting features in this game. As with the Zitadelle scenario published in Issue 3, the shipping lane target type has been converted into a ground unit target type. Thus, when you wish to attack enemy ground units, you must go through the attack shipping lanes routine.

Radar facilities were present in May 1940, but played no part in the action covered in this scenario. They have been omitted from the data base. In consequence, both players will have to mount a high level of standing patrols. With ground units as a main target type, and with most of them on the front line, there will be precious little time to launch an intercept.

Armee de l'Air is a very tactical scenario. Few, if any, strategic missions need be flown by either side. Airbases are probably the most important target type. Enemy aircraft are most easily destroyed when on the ground.

Only the Germans get any points for bombing population, and then only for certain cities. This is to simulate the terror bombing of Rotterdam and Brussels which had such a marked effect upon those governments.

SOME VARIATIONS

1. Aircraft Availability. Had the delivery of Dewoitine's D 520s been at the level expected, then many more French *escadrilles* would have been equipped with them by May, 1940. Up to 8 fighter units equipped with MS 406s, MB 151s or MB 152s may swap them for an equivalent number of D 520s.

2. The Spitfire. Assume Churchill had consented to releasing some Spitfire squadrons to France. Add up to 4 squadrons of Spitfires to the Allied OB, distributing them to any airbase in France already housing a British fighter squadron. The official establishment (OE) for each squadron is 16. Give each squadron 12-16 aircraft, 0-2 veteran pilots, 6-10 trained pilots and a fatigue level between 5 and 7. Type (Y) for naval ops (i.e. ground units).

3. Extended Campaign. The static nature of ground forces in *Europe Ablaze* makes it difficult to simulate the entire campaign. If, however, you are prepared to overlook the immobility of your panzers, an interesting game will develop into the early days of June. Change the game length to 25, Axis thresholds to 920/1060 and Allied thresholds to 30/60.

This scenario was designed by Adrian Long. It was the winning entry in our *Europe Ablaze* Scenario Design Contest. Adrian gets $500 for his trouble. Please read the details for our *Battlefront* Design Contest elsewhere in the magazine. ◆

EUROPE ABLAZE

Technical Data on Plane Types

PART TWO

Japanese and Minor Axis Aircraft of World War II

In this second installment of our ***Europe Ablaze*** *technical feature, Japanese, Italian and minor Axis aircraft are described and formatted. All production types as well as many of the more interesting development types are included.*

Part Three, in the next issue (or the one after, depending how much room we have), will cover American and French aircraft.

JAPANESE AIRCRAFT DESIGNATIONS

The air forces of Japan were organized as appenadages of the Army and Navy, in much the same way as the US air forces. This is in contrast to the British, French and German practice where the air forces were established as a separate service.

It would be an understatement to say that the Japanese Army and Navy seldom co-operated. Outright conflict over resources, personnel and design facilities was the rule even under adverse wartime conditions.

It comes as no surprise, then, to find that the systems for naming aircraft had absolutely nothing in common. Understanding the Japanese Naval Aircraft designation system is of no use in identifying Japanese Army aircraft. In the following paragraphs, an attempt has been made to summarize the main features of each system.

The Imperial Japanese Army

Throughout the war, a Japanese Army aircraft could be identified by up to three systems. The first, introduced in 1927, was a type number system; the second, introduced in 1932, a *Kitai* number system and the third a popular name.

For example, Army Type 1 Fighter, Ki-43 and *Hayabusa* (Peregrine Falcon) all describe the same aircraft - the single engine fighter code-named Oscar by the Allies.

1. Type Numbers. Aircraft accepted for service were identified by a number and a short function description. The number corresponded to the last digits of the Japanese year in which the aircraft was accepted. Prior to the year 2599 (1939 A.D.), the last two digits were used; in 2600 (1940 A.D.), the Type Number became 100 and on and after 2601 (1941 A.D.), only the last digit was used.

Thus the Army Type 97 Fighter is the Nate, the only fighter to enter Japanese Army service in 1937. Where more than one type in a particular category entered service in the same year, care had to be taken to make sure the functional description distinguished them. Consider the Army Type 97 light bomber (Mary) and the Army Type 97 heavy bomber (Sally).

Where more than one production variant existed, a Model number was issued. For example, Army Type 1 Fighter Model 2B is the second production version of the second model.

Foreign built aircraft in Army service were given a letter code instead of a year number.

2. Kitai Numbers. From 1932, all aircraft projected for the Army were assigned a Kitai (Ki), or airframe, number. They were allocated in numerical order until 1944, when they were deliberately jumbled in an attempt to confuse Allied intelligence. For example, the Kitai numbers for the Tony are

Ki-61	Project Designation
Ki-61-Ia	First production version of the first model
Ki-61-II KAI	Modified prototypes of the second model
Ki-61-II KAIb	Second production version of the second model

Gliders and certain specialized research aircraft did not use Kitai numbers after 1936.

3. Popular Names. Soon after the onset of war, it became apparent that Type Number and Kitai systems had little public appeal. Not every aircraft received a popular name and in contrast to the Navy, the Army chose their names completely at random.

The Imperial Japanese Navy

Not to be outdone, Japanese Naval aircraft could be identified by up to four different systems.

For example, Navy Experimental 14-Shi Carrier Attack Bomber, B6N, Navy Type 99 Carrier Attack Bomber and *Tenzan* (Heavely Mountain) are four different names for the Jill torpedo bomber.

1. Experimental Shi Numbers. From 1931 a Shi number was issued to each aircraft type projected for the Navy. The number related to the year of the Emperor's reign. Thus 1940, the 15th year of Emperor Hirohito's reign is known as Experimental 15-Shi. A brief description of the aircraft's purpose was added after the Shi number.

2. Short Designation System. This is the most informative of the Navy's systems.

The first letter describes the aircraft's type. **A** (Carrier Fighter) **B** (Carrier Attack Bomber) **C** (Reconnaissance Plane) **D** (Carrier Bomber) **E** (Reconnaissance Seaplane) **F** (Observation Seaplane) **G** (Attack Bomber) **H** (Flying Boat) **J** (Land-based Fighter) **K** (Trainer) **L** (Transport) **N** (Fighter Seaplane) **P** (Bomber) **Q** (Patrol Plane) **R** (Land-based Reconnaissance) **S** (Night Fighter).

The first numeral is the number of aircraft of that type which have been ordered to date.

The second letter identifies the aircraft's manufacturer (e.g. M = Mitsubishi).

These three characters remain unchanged in the life of the aircraft.

The second number identifies the particular model with minor changes further defined by a lower case letter.

Thus, the A6M5c is the 3rd variant of the 5th model of Mitsubishi's carrier fighter, the 6th such type to be ordered by the Navy.

3. Type Number System. This is similar to the Army's Type Number system, except that aircraft accepted for production in the year 2600 are called Type 0 (not 100) and model variants are distinguished with two numbers rather than one letter and one number.

Thus, Navy Type 0 Carrier Fighter Model 53 is another way of describing the late model Zero which illustrates the Short Designation system.

4. Popular Names. The Navy did not encourage the use of popular names and it was not until 1943 that this policy was reversed and popular names issued.

Fighters	Named after meteorological phenonema
Attack Aircraft	Named after mountains
Recon Aircraft	Named after clouds
Bombers	Named after stars
Patrol Planes	Named after oceans

Allied Code Name System

Rather than attempt to use the difficult Japanese systems, Allied forces developed a recognition code based on the use of first names. This simple system proved immensely successful.

Male Names	Fighters, Reconnaissance Seaplanes
Female Names	Bombers, Recon Aircraft, Flying Boats, Transports (using the letter T)

AIRCRAFT NOTES

The following notes are intended to give a brief summary of operational histories as well as to identify the more important modifications made to major aircraft types. The arrangement in this section corresponds to the order in the tables.

Japanese Army Aircraft

Ki-32 (MARY). Single engine light bomber. Entered service 1938 and saw action against Hong Kong in Dec 1941. Thereafter used in a training role.

Ki-45 (NICK). Twin engine heavy fighter. Entered service Oct 1942 in China/Burma Theatre. Used extensively in New Guinea and later as a night fighter in defense of the homeland.

Ki-48 (LILY). Twin engine light bomber. Early models entered service late 1940. Inadequate armament and bomb load resulted in its withdrawal from front line service in early 1942. Later models were better armed but light bomb load made their employment ineffective.

Ki-61 (TONY). Single engine fighter. Entered service Apr 1943 and performed well against US fighters in SW Pacific but maintenance difficulties hindered employment. Later models used in defense of the Philippines and Japan.

Ki-100 (-). Single engine interceptor. High altitude development of Ki-61 intended to combat US B-29s over Japan. Entered service early 1945 and in use until the end of the war. Regarded by many pilots as the Army's best fighter of the war.

Ki-102 (RANDY). Twin engine heavy fighter. Entered limited service early 1945 in Okinawa campaign. Experimental night fighter versions under development at war's end.

Ki-76 (STELLA). Single engine recon, liason and ASW patrol aircraft. Entered service late 1942 and later modified for use aboard Japanese Army CV *Akitsu Maru*.

Ki-15/C5M (BABS). Single engine reconnaissance aircraft. Entered service in 1937 and saw action in the first years of the war in SE Asia. Lack of pilot and fuel tank protection forced its relegation to training duties in the last year of the war.

Ki-21 (SALLY). Twin engine heavy bomber. Entered service 1938 and led bombing offensive in SE Asia in the early years of the war. Although vulnerable to Allied fighters, saw action in all theatres until final surrender. Some early models were later modified as transports.

Ki-30 (ANN). Single engine light bomber. Entered service 1938 and committed in the Philippines after destruction of US air forces. Subsequently used in a training role. Some used by the Thai Air Force against the French in early 1941.

Ki-46 (DINAH). Twin engine reconnaissance, interceptor and ground attack aircraft. Superior, fast, high altitude recon plane used extensively in all theatres. Proved very troublesome to Allied interceptors, even in closing stages of the war. Less successful as a stop gap interceptor and ground attack aircraft.

Ki-51 (SONIA). Single engine ground attack and tactical reconnaissance aircraft. Used throughout the war in ground attack role. Slow speed made it vulnerable to Allied fighters but remained well-liked by its crews because of reliability, ease of maintenance, manoeuverability and cockpit protection.

JAPANESE ARMY AIRCRAFT OF WW II

NAME	[11]	Mary	Nick	Nick	Lily	Lily	Tony	Tony	(-)	Randy	Stella
DESIGNATION	or[11]	Ki-32	Ki-45a	Ki-45c	Ki-48I	Ki-48II	Ki-61Ia	Ki-61Ib	Ki-100	Ki-102b	Ki-76
ROLE	0-3	2	1	0	2	2	0	0	0	1	3
CREW	0-7	2	2	2	4	4	1	1	1	2	2
FUEL	1-255	59	64	57	75	71	22	32	37	55	44
PAYLOAD	0-63	4	4	0	3	6	4	4	4	4	1
SERVICE CEIL.	11-41	29	35	33	31	33	38	33	36	33	18
MAX. SPEED	1-41	13	17	17	15	16	18	18	18	18	6
OPT. ALTITUDE	1-31	13	23	20	12	18	16	14	23	20	5
CRUIS. SPEED	1-31	9	13	13	11	12	12	13	13	13	4
CLIMB RATE	1-15	7	13	12	9	10	15	12	14	12	6
FIREPOWER	0-7	1	4	5	1	1	4	5	5	6	1
MANOEUVER.	0-7	5	4	4	4	3	6	6	6	4	6
VULNERABILITY	0-7	3	5	5	2	4	5	5	5	4	2
NIGHT	Y/N	N	N	Y	N (Y)	N (Y)	N	N	N	N (Y)	N
TOT. PROD.	[#]	c. 850	c. 1,200	c. 480	c. 560	c. 1,400	c. 1,380	c. 1,270	c. 380	c. 220	c. 400

NAME	[11]	Babs	Sally	Sally	Ann	Dinah	Dinah	Dinah	Sonia	Peggy	Steve
DESIGNATION	or[11]	Ki-15/C5M	Ki-21I	Ki-21II	Ki-30	Ki-46II	Ki-46IIIK	Ki-46IIIb	Ki-51	Ki-67	Ki-83
ROLE	0-3	3	2	2	2	3	0	1	2	2	0
CREW	0-7	2	5	5 (6)	2	2	2	2	2	6	2
FUEL	1-255	69	70	62	47	83	55	55	38	84	65
PAYLOAD	0-63	0	8	8	3	0	0	2	2	7	1
SERVICE CEIL.	11-41	37	28	33	28	35	34	34	27	31	41
MAX. SPEED	1-41	15	13	15	13	19	19	19	13	17	22
OPT. ALTITUDE	1-31	13	13	15	13	19	20	20	10	20	30
CRUIS. SPEED	1-31	10	11	12	12	13	13	13	11	13	14
CLIMB RATE	1-15	10	6	8	8	7	6	6	8	7	15
FIREPOWER	0-7	1	2	4	1	1	4	3	2	4	6
MANOEUVER.	0-7	6	4	4	5	5	5	5	6	5	6
VULNERABILITY	0-7	3	2	3	2	5	5	5	4	5	5
NIGHT	Y/N	N	N	N	N	N	N (Y)	N	N	N	N
TOT. PROD.	[#]	c. 490	c. 770	c. 1,280	c. 690	c. 1,100	c. 180	c. 200	c. 2,570	c. 700	4

NAME	[11]	(-)	Nate	Oscar	Oscar	Tojo	Helen	Frank	(-)	(-)	Patsy
DESIGNATION	or[11]	Ki-109	Ki-27	Ki-43I	Ki-43II	Ki-44II	Ki-49II	Ki-84I	Ki-115	Ki-93	Ki-74
ROLE	0-3	0	0	0	0	0	2	0	2	1	2
CREW	0-7	4	1	1	1	1	7	1	1	2	5
FUEL	1-255	70	47	44	47	41	67	44	50	70	229
PAYLOAD	0-63	0	1	0	4	0	8	2	6	4	8
SERVICE CEIL.	11-41	31	27	39	37	37	31	34	21	40	39
MAX. SPEED	1-41	17	15	15	16	19	15	20	17	19	18
OPT. ALTITUDE	1-31	20	11	13	13	17	16	20	9	27	28
CRUIS. SPEED	1-31	13	11	10	14	13	11	14	9	11	13
CLIMB RATE	1-15	7	14	15	14	15	6	14	7	11	8
FIREPOWER	0-7	3	3	3	4	5	4	5	0	6	1
MANOEUVER.	0-7	5	7	7	6	5	2	6	4	4	2
VULNERABILITY	0-7	5	3	2	4	5	4	6	2	5	4
NIGHT	Y/N	N (Y)	N	N	N	N	N (Y)	N	N	N	N (Y)
TOT. PROD.	[#]	22	c. 3,400	c. 720	c. 5,150	c. 1,200	c. 750	c. 3,400	c.100	2	16

Used as a kamikaze in the closing months of the war.

Ki-67 (PEGGY). Twin engine heavy bomber. Entered service late 1944 after long development and production delays. Arguably the best Japanese bomber of the war. Used by both Army and Navy in torpedo and conventional bombing roles.

Ki-83 (STEVE). Twin engine high altitude long range fighter. Four prototypes only available before war ended. Very promising type whose performance matched that of the F7F Tigercat and the de Havilland DH 103 Hornet.

Ki-109 (-). Twin engine heavy interceptor. Entered service Dec 1944 and used in defense of Japan against B-29s. Mounted a 75mm AA gun in the nose but was otherwise basically a Ki-67 airframe. B-29s switched tactics to low level night attacks before the success of the aircraft could be judged. No match for Allied fighters.

Ki-27 (NATE). Single engine fighter. Entered service 1938 and used extensively in China, Manchukuo and against Russian aircraft in the Nomonhan Incident in mid 1939. Served in China throughout the war, but replaced with modern types in other theatres. Used for home defense until 1943 and then as an advanced trainer.

Ki-43 (OSCAR). Single engine fighter and fighter bomber. Entered service Dec 1941 and proved superior to all Allied aircraft then employed in the Pacific and SE Asian Theatres. Numerically the most important Japanese fighter of the war, it served in front line units until the last year.

Ki-44 (TOJO). Single engine interceptor fighter. Entered service mid 1942 in China/Burma Theatre and for some time was the only Japanese fighter with the speed and climb rate to challenge US B-29s. Production halted in 1944 in favour of Ki-84.

Ki-49 (HELEN). Twin engine heavy bomber. Entered service early 1942 as a replacement for the Ki-21 but poor field performance plagued its operational career and production was phased out by mid 1944.

Ki-84 (FRANK). Single engine fighter and fighter bomber. Entered service late 1943 and put up spirited resistance in China and the Philippines. Generally recognised as the best Japanese fighter to see large scale service in the war.

Ki-115 (-). Single engine suicide attack aircraft. First purpose built suicide plane but war ended before it could enter service. Rigid undercarriage was to be jettisoned on take-off.

Ki-93 (-). Twin engine heavy fighter and ground attack aircraft. Characterized by heavy armament in a ventral gondola. War's end prevented the aircraft from seeing action.

Ki-74 (PATSY). Twin engine high altitude long range reconnaissance bomber. War ended before these aircraft could enter service. Projected uses included bombing the B-29 bases in the Marianas as well as direct attacks on the US mainland.

Japanese Navy Aircraft

D1A (SUSIE). Single engine biplane dive bomber. Entered service 1937 but relegated to reserve units by the outbreak of war in 1941. Used as a trainer until 1943.

D3A (VAL). Single engine dive bomber. Entered service 1940 and saw action in a land-based role in China for 14 months prior to the outbreak of war with the Western Allies. Principal carrier borne bomber in early years of the war then later used in training role and finally for kamikaze sorties.

E13A (JAKE). Single engine twin float reconnaissance seaplane. Entered service late 1941 and used both from warships and naval bases. Performed air-sea rescue, shipping attack and ASW duties throughout the war and finally served in a kamikaze role.

E16A (PAUL). Single engine twin float reconnaissance seaplane. Entered service 1944 and suffered heavy losses to Allied fighters in the Philippines. Used as a kamikaze in the closing months of the war.

B7A (GRACE). Single engine torpedo and dive bomber. Entered service April 1944 and showed excellent performance. The loss of the carrier fleet prevented its intended employment and it saw limited action from land bases in the last year of the war.

H6K (MAVIS). Four engine long range maritime reconnaissance flying boat. Entered service in Jan 1938 and performed recon, bombing and transport missions in the Pacific until withdrawn from service in late 1942. Served thereafter in a troop transport role.

H8K (EMILY). Four engine long range maritime reconnaissance flying boat. Entered service 1943 and served throughout the Pacific in recon, bombing and ASW roles until the surrender. Respected by Allied fighter pilots as the most difficult Japanese aircraft to shoot down.

N1K-J (GEORGE). Single engine interceptor. Entered service 1944 and although plagued by undercarriage failure and maintenance difficulties, proved capable of matching the best Allied fighters. The later types did not possess the vices of their predecessors and ended the war as the most formidable of the IJN's fighter aircraft.

K11W (-). Single engine crew trainer. Entered service early 1943 and operated as a bomber crew trainer until the last months of the war when expended in kamikaze sorties.

Q1W (LORNA). Twin engine ASW patrol aircraft. Entered service in early 1944 and employed to protect shipping convoys from Allied submarines. Poor protection and low speed made it easy prey for Allied fighters and the type received minimal production priority.

J7W (-). Single engine interceptor of canard configuration (i.e. rear mounted engine with pusher propellor). Prototype not flown until Aug 1945. Unusal design with some teething problems but may have proven a formidable opponent for US B-29s. Turbojet version proposed but not proceded with.

A5M (CLAUDE). Single engine fighter. Entered service 1937 as the IJN's first carrier operable monoplane fighter. Relegated to second line and training duties by the outbreak of the Pacific War.

G3M (NELL). Twin engine attack bomber. Entered service 1937 and used for deep penetration strikes on the Chinese mainland. Inadequate armament resulted in heavy casualties. Saw action in the opening year of war in the Pacific and SE Asia then prgressively withdrawn to transport, ASW and training duties.

F1M (PETE). Single engine observation float seaplane. Entered service 1940 and excellent manoeuverability resulted in its use as a fighter, attack bomber, ASW patrol aircraft and dive bomber throughout the Pacific region.

A6M (ZERO). Single engine fighter. Entered service late 1940 and, in one model or another, operated as the IJN's main fighter type throughout the war. Later models were developed as fighter bombers. Certainly the best known Japanese aircraft of WW II.

G4M (BETTY). Twin engine attack bomber. Entered service prior to the outbreak of war in 1941 as a replacement for the G3M. Saw

JAPANESE NAVY AIRCRAFT OF WW II

NAME	[11]	Susie	Val	Val	Jake	Paul	Grace	Mavis	Mavis	Emily	George
DESIGNATION	or[11]	D1A2	D3A1	D3A2	E13A1	E16A1	B7A2	H6K4	H6K5	H8K2	N1K1-J
ROLE	0-3	2	2	2	3	3	2	3	3	3	0
CREW	0-7	2	2	2	3	2	2	7	7	7	1
FUEL	1-255	49	61	56	95	48	58	255	230	255	45
PAYLOAD	0-63	1	3	3	2	2	6	8	8	15	1
SERVICE CEIL.	11-41	23	30	34	27	33	37	32	31	29	41
MAX. SPEED	1-41	10	12	13	12	14	18	11	12	15	18
OPT. ALTITUDE	1-31	11	9	20	7	18	21	13	20	16	19
CRUIS. SPEED	1-31	7	9	9	7	10	12	7	8	9	12
CLIMB RATE	1-15	6	8	8	8	11	10	6	6	8	13
FIREPOWER	0-7	2	3	3	1	2	2	1	2	4	5
MANOEUVER.	0-7	6	6	6	5	5	5	1	1	0	6
VULNERABILITY	0-7	2	3	3	3	3	5	2	3	6	5
NIGHT	Y/N	N	N	N	N (Y)	N	N	N (Y)	N (Y)	N (Y)	N
TOT. PROD.	[#]	c. 590	c. 480	c. 1,000	c. 1,400	c. 250	c. 110	c. 130	c. 40	c. 120	c. 530

NAME	[11]	George	(-)	Lorna	(-)	Claude	Nell	Nell	Pete	Zero	Zero
DESIGNATION	or[11]	N1K2-J	K11W1	Q1W1	J7W1	A5M4	G3M2	G3M3	F1M2	A6M2	A6M3
ROLE	0-3	0	2	3	0	0	2	2	3 (0) (2)	0	0
CREW	0-7	1	2	3	1	1	5	6	2	1	1
FUEL	1-255	53	85	62	25	44	147	202	35	68	55
PAYLOAD	0-63	4	2	4	1	1	6	6	2	1	1
SERVICE CEIL.	11-41	35	18	15	39	32	30	34	31	33	36
MAX. SPEED	1-41	18	7	10	23	14	12	13	12	17	17
OPT. ALTITUDE	1-31	18	6	4	28	10	14	19	11	14	20
CRUIS. SPEED	1-31	12	5	8	13	10	9	9	8	10	12
CLIMB RATE	1-15	13	3	4	15	14	6	9	9	13	13
FIREPOWER	0-7	6	1	1	6	2	2	2	2	4	4
MANOEUVER.	0-7	6	4	4	5	7	3	3	6	7	7
VULNERABILITY	0-7	5	2	2	5	3	2	3	3	3	4
NIGHT	Y/N	N	N	N	N	N	N (Y)	N (Y)	N	N	N
TOT. PROD.	[#]	c. 350	c. 800	c. 150	2	c. 1,050	c. 680	c. 330	c. 1,120	c. 840	c. 1,700

NAME	[11]	Zero	Betty	Betty	Betty	Jack	Jack	Sam	(-)	Kate	Irving
DESIGNATION	or[11]	A6M5	G4M1	G4M2	G4M3	J2M3	J2M5	A7M2	J8M1	B5N2	J1N1-S
ROLE	0-3	0 (1)	2	2	2	0	0	0	0	2	0
CREW	0-7	1	6	6	6	1	1	1	1	3	2
FUEL	1-255	47	195	195	128	54	38	43	14	83	87
PAYLOAD	0-63	1 (4)	6	8	8	0	0	4	0	6	0
SERVICE CEIL.	11-41	38	29	29	30	38	37	36	39	27	31
MAX. SPEED	1-41	18	13	14	15	18	19	20	28	12	16
OPT. ALTITUDE	1-31	20	14	15	17	17	22	22	33	12	19
CRUIS. SPEED	1-31	12	10	10	10	11	12	13	20	8	10
CLIMB RATE	1-15	14	6	4	5	15	15	15	15	6	9
FIREPOWER	0-7	4 (3)	2	3	3	5	6	5	3	1	4
MANOEUVER.	0-7	7 (6)	3	3	3	5	5	7	5	4	4
VULNERABILITY	0-7	5	2	3	5	5	6	5	7	2	5
NIGHT	Y/N	N	N (Y)	N (Y)	N (Y)	N	N	N	N	N	Y
TOT. PROD.	[#]	c. 6,500	c. 1,230	c. 1,160	c. 60	c. 410	c. 40	10	7	c. 1,070	c. 400

action throughout the war in all theatres and is arguably the best known of all Japanese bombers. More G4Ms were built than any other bomber type.

J2M (JACK). Single engine interceptor. Designed to a 1939 specification, persistant mechanical problems and Mitsubishi's preoccupation with the A6M series, prevented the aircraft from entering service until mid 1944. Despite continual technical difficulties, the J2M with its excellent high altitude performance was the preferred bomber destroyer of most Japanese fighter pilots.

A7M (SAM). Single engine fighter. Designed as the successor to the A6M, engine problems and limited design facilities slowed its development, only one production aircraft being completed by war's end. Excellent performance and handling characteristics would have made it a tough opponent for Allied fighters.

J8M (-). Single engine short range rocket powered interceptor. An interesting design unable to be fully tested before war's end.

B5N (KATE). Single engine torpedo attack bomber. Entered service 1940 and at the outbreak of war was the most modern carrier borne bomber in the world. Relegated to second line duties following heavy losses in 1944, the B5N served out the remainder of the war in recon and ASW duties.

J1N1-S (IRVING). Twin engine long range night fighter. Developed from a long range escort design, the J1N1-S entered service in 1943 and achieved some success against the slow B-24s. Phased out early 1945 since unable to adequately engage the much faster B-29s.

A6M2-N (RUFE). Single engine float seaplane fighter. Designed to provide fighter cover to amphibious operations conducted beyond the range of normal fighter cover, the A6M2-N entered service too late to see much action in its intended role. It could not compete with land-based Allied fighters and relegated to training role.

B6N (JILL). Single engine torpedo attack bomber. Replaced the B5N as the main torpedo bomber aboard Japanese carriers from 1944, although size restricted its use to the larger CVs. Saw extensive land-based use from mid 1944 until the end but without fighter protection were easy prey for Allied fighters.

C6N (MYRT). Single engine reconnaissance aircraft. Entered service 1943 as a purpose built carrier borne recon plane. Speedy type which earned respect of Allied fighter pilots. Used later as a night fighter.

G8N (RITA). Four engine heavy bomber. Prototypes not completed until 1944 and by then the course of the war had so turned against Japan that resources could not be spared for its production.

Kikka. Twin jet attack bomber. First jet-propelled Japanese bomber. Development halted by war's end after just 2 prototypes had been completed.

D4Y (JUDY). Single engine dive bomber and reconnaissance aircraft. Initially entered service 1942 in recon role. Not employed as a dive bomber until 1943. Fast, clean airframe marred only by inadequate protection for the crew and fuel tanks. D4Y4 variant built specifically as a kamikaze type.

P1Y (FRANCES). Twin engine attack bomber. Delayed by chronic engine problems, the P1Y did not enter service until March 1945. It gave a good account of itself both in its intended role and as an emergency night fighter.

G10N (-). Six engine super heavy bomber. Mammoth bomber designed to strike at the US mainland from Japan. Project still under development by war's end.

Italian Aircraft

S.A.I.207 (-). Single engine interceptor. Lightweight fighter developed from pre-war civil speedster but Armistice curtailed development before the aircraft could see action.

Ba.65 (-). Single engine ground attack reconnaissance aircraft. Entered service 1936 and saw limited action in North Africa and the Balkans before being relegated to second line duties.

Ba.88 (LYNX). Twin engine attack bomber. Entered service 1938 and saw some action in the Western Desert before being withdrawn from duty because of poor performance.

F.C.20bis (-). Twin engine ground attack aircraft. Used experimentally in 1942 but design not proceded with.

Z.1007bis (KINGFISHER). Triple engine medium bomber. Entered service 1938 and saw action in French, Balkan and North African campaigns before being relegated to recon, training and ASW duties in 1942.

Z.1018 (Lion). Twin engine medium bomber. Entered service early 1943 and although too late to affect the course of the war, this aircraft was the best of Italian bomber designs.

Ca.133 (-). Triple engine medium bomber. Entered service 1936 and participated in Ethiopian and Balkan campaigns before poor performance forced its relegation to transport duties.

Ca.135P.XI (-). Twin engine medium bomber. Entered service 1938 and operated briefly in Russia and then as an advanced trainer.

Ca.310 (SOUTH WEST WIND). Twin engine light bomber. Multi-purpose aircraft entered service 1937 and saw action in bombing, training, recon and liason roles in all theatres. Ease of maintenance and good handling characteristics made it popular with its crews but inadequate protection against modern fighters made it vulnerable in contested skies.

F.5 (-). Single engine fighter. Entered service 1938 and after mediocre performance in day/night interceptor role was withdrawn from front line duty.

CR.30 (-). Single engine biplane fighter. Entered service 1934 and operated in secondary and training roles until the Armistice in 1943.

CR.32bis (-). Single engine biplane fighter. Entered service 1936 and was the most important fighter in the pre-war IAF. Saw action in the early campaigns, especially Greece and North Africa before being relegated to night fighter and ground support roles then finally to advanced training duties.

BR.20M (STORK). Twin engine medium bomber. Entered service 1937 and saw action in France, against England and in Balkan and North African campaigns before recon role in Russia and night attack role against Malta.

G.50bis (ARROW). Single engine fighter and fighter bomber. Entered service 1939 as Italy's first all metal monoplane fighter with retractable undercarriage. Saw action in France then Balkans and North Africa before being relegated to second line duties in mid 1942.

RS.14B (-). Twin engine reconnaissance bomber floatplane. Entered service 1941 and gave excelent performance in recon, ASW patrol and convoy escort duties until Armistice in 1943.

CR.42AS (FALCON). Single engine biplane fighter. Last biplane to enter service in any air force and used in France and (unsuccessfully) against England in the winter of 1940-41. Saw action in Greece and

JAPANESE NAVY AIRCRAFT (Cont.)

NAME	[11]	Rufe	Jill	Myrt	Rita	(-)	Judy	Judy	Judy	Frances	(-)
DESIGNATION	or[11]	A6M2-N	B6N2	C6N1	G8N1	Kikka	D4Y1	D4Y3	D4Y4	P1Y1	G10N1
ROLE	0-3	0	2	3 (0)	2	2	2 (3)	2	2	2 (0)	2
CREW	0-7	1	3	3 (2)	7	1	2	2	1	3	7
FUEL	1-255	51	73	83 (65)	123	22	45 (55)	57	51	67	245
PAYLOAD	0-63	1	6	0	15	6	3 (0)	5	6	12 (0)	63
SERVICE CEIL.	11-41	33	30	35	33	39	32	34	28	30	41
MAX. SPEED	1-41	14	15	19	18	22	17	18	18	17	21
OPT. ALTITUDE	1-31	16	16	20	26	33	16	20	19	19	32
CRUIS. SPEED	1-31	9	10	12	12	16	13	10	12	12	14
CLIMB RATE	1-15	12	8	12	7	9	9	11	9	12	2
FIREPOWER	0-7	4	1	1 (4)	5	0	2 (1)	2	1	3	3
MANOEUVER.	0-7	5	4	5	1	4	6	6	5	4	0
VULNERABILITY	0-7	3	4	5	4	7	3	3	2	6	5
NIGHT	Y/N	N	N	N (Y)	N (Y)	N	N	N	N	N (Y)	N (Y)
TOT. PROD.	[#]	c. 330	c.1,280	c.460	4	2	c. 980	c. 540	c. 300	c. 1,100	0

ITALIAN AIRCRAFT OF WW II

NAME	[11]	(-)	(-)	Lynx	(-)	Kingfisher	Lion	(-)	(-)	S.W.Wind	(-)
DESIGNATION	or[11]	S.A.I. 207	Ba. 65	Ba. 88	F.C. 20bis	Z.1007bis	Z.1018	Ca.133	Ca. 135P.XI	Ca.310	F.5
ROLE	0-3	0	2 (3)	2	2	2	2	2	2	2	0
CREW	0-7	1	1	2	2	5	5	3	4	3	1
FUEL	1-255	24	25	51	39	58	41	65	61	58	25
PAYLOAD	0-63	0	8 (0)	8	5	9	12	4	12	3	0
SERVICE CEIL.	11-41	33	26	26	23	25	25	18	23	23	31
MAX. SPEED	1-41	19	13	15	13	14	17	8	14	11	16
OPT. ALTITUDE	1-31	17	16	13	13	12	13	9	16	10	18
CRUIS. SPEED	1-31	15	10	10	11	11	12	7	12	10	15
CLIMB RATE	1-15	14	6	7	8	6	10	4	5	5	15
FIREPOWER	0-7	2	3	2	3	2	3	2	2	2	2
MANOEUVER.	0-7	6	5	4	4	3	4	3	3	5	6
VULNERABILITY	0-7	3	3	3	4	3	5	3	3	3	3
NIGHT	Y/N	N	N	N	N	N	N	N	N	N	N (Y)
TOT. PROD.	[#]	18	c. 220	c. 150	12	c. 560	c. 20	c. 520	c. 150	c. 1,600	15

NAME	[11]	(-)	(-)	Stork	Arrow	(-)	Falcon	Centaur	Lightning	Thunderbolt	Greyhound
DESIGNATION	or[11]	CR.30	CR.32bis	BR.20M	G.50bis	RS.14B	CR.42AS	G.55/I	MC. 200	MC.202	MC.205V
ROLE	0-3	0	0	2	0 (1)	2 (3)	0 (1)	0 (1)	0 (1)	0	0 (1)
CREW	0-7	1	1	5	1	3	1	1	1	1	1
FUEL	1-255	35	31	73	23 (26)	77	29	34	26	20	27
PAYLOAD	0-63	0	1	12	0 (3)	3	0 (2)	0 (3)	0 (1)	0	0 (3)
SERVICE CEIL.	11-41	29	25	26	35	27	34	41	29	38	36
MAX. SPEED	1-41	11	11	15	15	15	14	19	16	19	20
OPT. ALTITUDE	1-31	10	10	11	15	9	15	20	15	16	24
CRUIS. SPEED	1-31	9	10	11	11	9	10	17	14	18	16
CLIMB RATE	1-15	8	9	4	13	6	14	14	14	15	15
FIREPOWER	0-7	2	4	2	2	3	2	5	2	4	4
MANOEUVER.	0-7	6	6	3	6 (5)	3	7	6	6	6	7
VULNERABILITY	0-7	3	3	3	4	5	3	5	4	5	6
NIGHT	Y/N	N	N (Y)	N (Y)	N	N (Y)	N (Y)	N	N	N	N
TOT. PROD.	[#]	c. 130	c. 1,310	c. 600	c. 780	c. 190	c. 1,780	c. 200	c. 1,150	c. 1,100	c. 260

ITALIAN AIRCRAFT (Cont.)

NAME	[11]	Falcon	Falcon	Ram	Archer	S. Hawk	Bat	Kangaroo	(-)	(-)	(-)
DESIGNATION	or[11]	Re.2000	Re.2001	Re.2002	Re.2005	S.M.79I	S.M.81	S.M.82	S.M.84	S.M.85	P.108B
ROLE	0-3	0	0	1	0 (1)	2	2	2	2	2	2
CREW	0-7	1	1	1	1	4	6	3	3	1	6
FUEL	1-255	43	28	34	29	68	75	109	57	30	130
PAYLOAD	0-63	0	0	7	0 (7)	10	15	30	15	4	26
SERVICE CEIL.	11-41	34	36	36	39	21	23	20	29	20	28
MAX. SPEED	1-41	16	17	16	22	13	17	12	13	11	13
OPT. ALTITUDE	1-31	16	13	18	20	13	4	10	12	13	14
CRUIS. SPEED	1-31	11	15	12	16	12	10	9	12	10	10
CLIMB RATE	1-15	11	13	15	15	5	4	3	5	4	4
FIREPOWER	0-7	2	4	4	5	2	2	2	2	1	3
MANOEUVER.	0-7	6	6	5	6 (5)	3	3	2	3	4	1
VULNERABILITY	0-7	3	3	4	5	3	3	3	4	2	4
NIGHT	Y/N	N	N (Y)	N	N	N (Y)	N (Y)	N (Y)	N (Y)	N	Y
TOT. PROD.	[#]	c. 350	c. 240	c. 230	c. 40	c. 1,370	c. 580	c. 400	c. 100	c. 40	c. 30

MINOR AXIS AIRCRAFT OF WW II

NATIONALITY	(-)	Bulgaria	Czechoslov.	Czechoslov.	Finland	Rumania	Rumania	Rumania			
DESIGNATION	[11]	D.A.R.10F	B534.IV	B.135	Myrsky II	IAR 37	IAR 80	IAR 81			
ROLE	0-3	2	0	0	0	2 (3)	0	0			
CREW	0-7	2	1	1	1	3	1	1			
FUEL	1-255	45	21	16	16	47	35	39			
PAYLOAD	0-63	4	0	0	0	5 (0)	0	2			
SERVICE CEIL.	11-41	30	35	28	30	26	35	33			
MAX. SPEED	1-41	14	13	17	16	10	16	17			
OPT. ALTITUDE	1-31	16	14	13	11	11	13	13			
CRUIS. SPEED	1-31	11	11	14	13	8	10	10			
CLIMB RATE	1-15	9	15	13	14	8	14	13			
FIREPOWER	0-7	3	4	3	4	1	5	5			
MANOEUVER.	0-7	5	6	6	7	5	6	5			
VULNERABILITY	0-7	3	4	4	4	3	4	4			
NIGHT	Y/N	N	N	N	N	N	N	N			
TOT. PROD.	[#]	c. 30	c. 520	16	c. 60	c. 320	c. 170	c. 260			

Balkans then North Africa, increasingly in a night attack or fighter bomber role.

G.55/I (CENTAUR). Single engine fighter and fighter bomber. Entered service just before Armistice and showed promise. Used by the fascist RSIAF 1943-44 in defense of northern Italy.

MC.200 (LIGHTNING). Single engine interceptor. Entered service 1939 and saw action in the Mediterranean, Russia and North Africa. From 1942 used additionally in a fighter bomber role.

MC.202 (THUNDERBOLT). Single engine fighter. Entered service 1941 and was the best of the Italian mass produced fighters. Saw action in all theatres and flew with both the RSIAF and the ICoAF after the Armistice.

MC.205V (GREYHOUND). Single engine fighter and fighter bomber. Entered service July 1943 in limited numbers and considered the equal of contemporary Allied fighters. Served later with the RSIAF in the defense of northern Italy.

Re.2000 (FALCON). Single engine interceptor. Entered limited service on convoy escort in 1942 but bulk of production exported to Sweden and Hungary.

Re.2001 (FALCON). Single engine fighter. Entered service mid 1942 and saw action in attacks on Malta before being relegated to night fighter duties in central Italy.

Re.2002 (RAM). Single engine fighter bomber. Entered service 1942 and saw action in the defense of Sicily and southern Italy. Post Armistice production used by the *Luftwaffe* against partisans in southern France.

Re.2005 (ARCHER). Single engine fighter. Entered service late 1942 and showed promise before Armistice. A few aircraft were later used by the *Luftwaffe* in the defense of Berlin.

S.M.79I (SPARROW-HAWK). Triple engine medium bomber. Entered service 1937 and saw action in all theatres in bombing, torpedo, recon and ASW patrol roles. Workhorse of the Italian bomber force.

S.M.81 (BAT). Triple engine medium bomber. Entered service 1936 and saw action in Balkan, Greek, North African and Russian campaigns. Relegated to ASW, transport and training duties in the last year of the war.

S.M.82 (KANGAROO). Triple engine heavy bomber. Entered limited service in 1941 in bombing role but soon relegated to transport duties.

S.M.84 (-). Triple engine attack bomber. Entered service 1939 and employed primarily as a torpedo bomber in the Mediterranean. Made conventional bombing attacks on Malta and in the Aegean.

S.M.85 (-). Twin engine dive bomber. Entered service 1939 and proved a dismal failure. Promptly replaced by Ju87s.

P.108B (-). Four engine long range heavy bomber. Entered service Nov 1942 and was Italy's only four engine heavy bomber. Saw action in night attacks on Gibraltar and US ports in North Africa.

Minor Axis Aircraft

Only those aircraft actually designed and manufactured by the country in question are included. Most Axis Allied aircraft were provided by Germany or Italy or occasionally from captured air arsenals.

For example, all Hungarian aircraft which saw action were provided by Germany or Italy.

Bulgaria

D.A.R.10F. Single engine dive bomber. Limited service 1941-42 before being replaced with Ju87s.

Czechoslovakia

B.534.IV. Single engine fighter. Entered service 1939 and comparable to the best fighters of the time. Retained in Slovak AF after annexation and saw action in Russia.

B.135. Single engine fighter. Entered service 1943 and saw action against USAAF bombers in defense of the Ploesti oilfields.

Finland

Myrsky II. Single engine fighter. Entered service 1943 and saw some action with both Axis and Allied forces.

Rumania

IAR 37. Single engine light bomber. Entered service 1939 and saw action throughout the war on the Russian Front in both bombing and recon roles.

IAR 80/81. Single engine fighters. Entered service 1942 and employed in fighter and ground support roles until the end of hostilities. ◆

Questions. . .
Continued from p.16

A number of people are probably using fastload cartridges for their C-64. We have not had any complaints about incompatibility.

One that we have used with all our games is the Power Cartridge manufactured by Kolff Computer supplies B.V. (a Dutch company) and available in Australia through OZISOFT at 8 Kippax St, Surry Hills (211-1266) for $149.00. If you cannot find it locally, you can purchase it direct from SSG. The cartridge cannot be used while you are creating a scenario; it works only while you are playing a game. You can expect to reduce disk access time by a factor of four.

If you are using a fastload cartridge with our games, why not drop us a line and let us know, so that we may advise others. ◆

Chris Crawford. . .
Continued from p.32

To win in this sort of contest you must, more often than not, correctly predict the other player's choice. In the game this will be tied to the artificial personality of the other players, which has in part been influenced by your previous actions. Information on which to base your assessment of another player's choices is also vital and gaining that info forms a core part of the game.

So what is the game really about? Well it will be a game where a single human player interacts with a number of other computer controlled players using all of the elements outlined above. The real plot could not be summarised in anything less than a book, which is just what Chris is doing. As well as the creative and original ideas the game will contain a book written by Chris, which will tell you the whole story.

A call to Chris just prior to publication of this issue revealed that all was well with the game, and it was progressing nicely for what is hoped at this stage to be a fall release date (if all goes well). I feel sure that whenever it arrives, *Siboot* will again showcase the original thinking that goes into Chris' games. ◆

Russia Notes
Continued from p.31

HQ to fill them. They are then brought back into play some 1-8 weeks later.

Once an armee looses all its Korps, it is considered an administrative formation. Only one administrative formation will ever be present in each army group. Armee HQs in excess of this limit of one per army group will be returned to the off-board administrative pool and will be activated later when conditions permit.

Administrative armees cannot be given orders, they will always be located with their army group HQ and they will have no effect upon the supply and admin routines.

REINFORCEMENTS AND PRODUCTION

The strategic component of *Russia* originally included the structures for both sides to create all their military equipment from raw materials. Each type of division, in fact each model, would have required a fixed number of personnel, equipment and armour points for its construction. Support points and replacements would also have been built by the expenditure of these points.

The points were to have been generated by a fixed component from the data base as well as a floating component derived from the control of on-map cities and regions.

About the end of January, and after much soul-searching, we abandoned this system in favour of a fixed reinforcement schedule. It was not primarily a memory shortage which forced this decision. We would have needed an extra 4K module in the strategic cycle which would have increased disk access time, but otherwise we could have managed.

What was the deciding factor was the realization that decisions of this type would only be appropriate in a game which covered all of Germany's involvement in WWII. To make the decisions meaningful we would have to create a complete economic environment. As it was, we would have to introduce so many constraints on productivity that the exercise would be wasted.

When we get around to doing our complete WW II extravaganza, then we'll see. . . ◆

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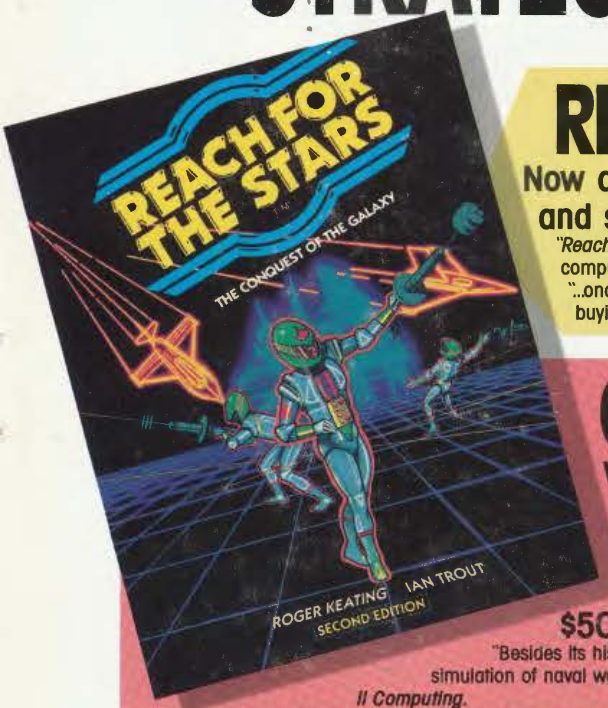


REACH FOR THE STARS

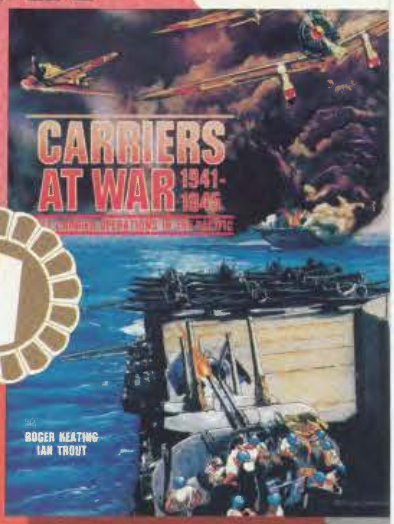
Now available for the Apple II family and the C-64/128 and soon for the Macintosh. Recommended Retail $45.00

"Reach for the Stars... is just about the best science fiction game for the thinking person available on any micro-computer." ***Science Digest.***

"...once mastered this might be the only game you'll ever want to buy for your C-64. Indeed, it would be worth buying a computer to play it. Definitely one of my most favourite games and a classic." ***Commodore Magazine.***

CARRIERS AT WAR

Winner of the 1985 Charles Roberts Award for Best Computer Game. Now available for the Apple II family and the C-64/128. Recommended Retail $50.00



"Besides its historical accuracy, *Carriers at War* is the best-playing simulation of naval warfare I have seen on either tabletop or video monitor." ***II Computing.***

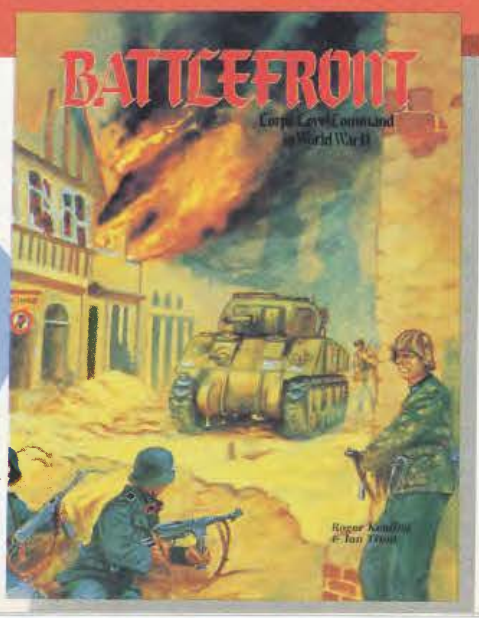
"Carriers at War is the best game available on World War II carrier operations. It is, perhaps, the best wargame of 1984 on any topic." ***Computer Gaming World.***

EUROPE ABLAZE

Chosen as the Best Wargame of 1986 by Commodore Microcomputers magazine Now available for the Apple II family and the C-64/128 Recommended Retail $50.00

"...prepare to experience what may well be the ultimate aerial warfare computer game. *Europe Ablaze*...is the best war game available for any home computer." **COMPUTE!'s Gazette.**

"As usual SSG have produced a top-of-the-range product. *Europe Ablaze* is exciting, compulsive and authentic." ***Commodore Magazine.***



BATTLEFRONT

Now available for the Apple II family and the C-64/128. Recommended Retail $40.00

"SSG have done their usual fine job of design as well as programming. I thoroughly enjoyed *Battlefront* and look forward to new scenarios." ***Fire & Movement Magazine.***

"Battlefront certainly gives a very good 'feel' for corps level operations. It is...fast, interesting, well designed and well presented: a worthy successor to *Carriers at War*." ***Breakout.***

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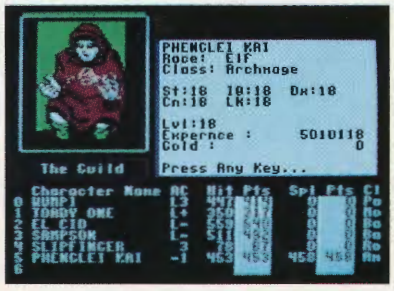
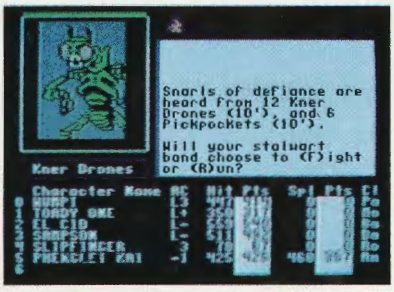

PHENGLEI KAI
Race: ELF
Class: Archmage
St:18 IQ:18 Dx:18
Cn:18 LK:18
Lvl:18
Experience : 5010118
Gold : 0
Press Any Key...
The Guild
Character Name AC Hit Pts Spl Pts Cl
0 WURPI L3 497 497 0 0 Fa
1 TOADY ONE L4 250 250 0 0 Mo
2 EL CID L4 553 553 0 0 Mo
3 SAMPSON L4 511 511 0 0 Mo
4 SLIPFINGER -3 70 70 0 0 Ro
5 PHENGLEI KAI -3 425 425 460 357 Ar

You get a new class of magic user – the Archmage. With 8 powerful spells like Heal All, Fanskar's Night Lance, and the awesome Mangar's Mallot.


Snarls of defiance are heard from 12 Kner Drones (10'), and 6 Pickpockets (10').
Will your stalwart band choose to (F)ight or (R)un?
Kner Drones
Character Name AC Hit Pts Spl Pts Cl
0 WURPI L5 497 497 0 0 Fa
1 TOADY ONE L4 250 250 0 0 Mo
2 EL CID L4 553 553 0 0 Mo
3 SAMPSON L4 511 511 0 0 Mo
4 SLIPFINGER -1 70 70 0 0 Ro
5 PHENGLEI KAI -3 425 425 460 357 Ar

There are over 100 monsters, like this Kner Drone. Many animated. All dangerous.

DANGER: Troops beware! Ahead lies the real-time Puzzle-Snare. Proceed at thy own risk.
Maze of Dread
Character Name AC Hit Pts Spl Pts Cl
0 WURPI L5 497 497 0 0 Fa
1 TOADY ONE L4 250 250 0 0 Mo
2 EL CID L4 553 553 0 0 Mo
3 SAMPSON L4 511 511 0 0 Mo
4 SLIPFINGER -1 70 70 0 0 Ro
5 PHENGLEI KAI -3 425 425 460 357 Ar

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